

---

*Improvement District No. 4*  
*Report on Water Conditions 2011*

---







February 1, 2012

Directors:

Ted R. Page  
Division 1

Terry Rogers  
Vice President  
Division 2

Randell Parker  
Division 3

Michael Radon  
President  
Division 4

Adrienne J. Mathews  
Division 5

William W. Van Skike  
Division 6

Gene A. Lundquist  
Division 7

James M. Beck  
General Manager

Amelia T. Minaberrigarai  
General Counsel

Board of Directors  
Kern County Water Agency  
P. O. Box 58  
Bakersfield, CA 93302-0058

Dear Members of the Board:

The *Improvement District No. 4 2011 Report on Water Conditions*, prepared as required by section 14.25 of the Kern County Water Agency (Agency) Act, is herewith filed with the Agency's Secretary of the Board. This is the 39th in a series required for the setting of groundwater charges for funding operating costs of Improvement District No. 4 (ID4) project facilities.

This report describes surface and groundwater conditions for ID4 and includes estimates of water supplies and requirements for the Water Year July 1, 2011 through June 30, 2012.

Also included is an operating cost projection through 2012. This projection and the recommendations indicate the desirability of establishing a groundwater charge for the 2012-13 water year. The information for setting this charge is contained in this report and is recommended for consideration at the public hearing to be held on Monday, March 19, 2012 at 3:00 p.m. in the Stuart T. Pyle Water Resources Center Board Room, located at 3200 Rio Mirada Drive, Bakersfield, California.

Respectfully submitted,

A handwritten signature in blue ink, appearing to read "James M. Beck".

James M. Beck  
General Manager

I hereby acknowledge receipt of the *Improvement District No. 4 2011 Report on Water Conditions* and will make it available for examination by the public.

A handwritten signature in blue ink, appearing to read "Memo J. Infante".

Secretary of the Board

(661) 634-1400

Mailing Address

P.O. Box 58  
Bakersfield, CA 93302-0058

Street Address

3200 Rio Mirada Dr.  
Bakersfield, CA 93308

Enclosure



# *Improvement District No. 4*

## *of the Kern County Water Agency*

### *2011 Board of Directors*

<b>Division 1</b>	Ted R. Page
<b>Division 2</b>	Terry Rogers
<b>Division 3</b>	Randell Parker
<b>Division 4</b>	Michael Radon, President
<b>Division 5</b>	Adrienne J. Mathews
<b>Division 6</b>	William Van Skike
<b>Division 7</b>	Gene A. Lundquist
Secretary	Lucinda Infante
General Manager	James M. Beck
General Counsel	Amelia T. Minaberrigarai

### *2011 Urban Bakersfield Advisory Committee*

The Urban Bakersfield Advisory Committee (UBAC) is charged with making recommendations to the Kern County Water Agency (Agency) Board of Directors (Board) on the Improvement District No. 4 (ID4) budget, water supply and water quality plans, and use of ID4 facilities. The Agency Board appoints nine members and nine alternate members to UBAC each year.

California Water Service Company  
Tim Treloar

City of Bakersfield Water Resources Department  
Maurice Randall

City of Bakersfield Public Resources Department  
Jason Meadors

East Niles Community Services District  
Tim Ruiz, Vice Chairman

North of the River Municipal Water District  
David Aranda

Kern County Water Agency Subcontractor  
Oildale Mutual Water Company  
Doug Nunneley, Chairman

Kern County Water Agency Appointed  
Brighthouse Networks  
Lou Patterson

Kern County Water Agency Appointed  
Vaughn Water Company  
Van Grayer

# Table of Contents

<i>Definitions</i>	7
<i>Summary &amp; Recommendations</i>	8
<i>Purpose</i>	10
<i>History of ID4</i>	12
General.....	13
<i>Water Supply &amp; Requirements</i>	14
Availability of Surface Water and Groundwater .....	15
Water Needed for Surface Delivery and Groundwater Replenishment .....	16
Water Obligated for Purchase by the Agency .....	16
Groundwater Conditions .....	16
Estimated Groundwater Extractions .....	17
Groundwater Replenishment .....	17
<i>Operations</i>	18
Banking .....	19
Exchanges .....	20
Summary of Water Supply Operations .....	20
<i>Planning &amp; Engineering</i>	22
Treated Water Capacity Expansion Project .....	23
Henry C. Garnett Water Purification Plant Expansion Project .....	23
<i>Henry C. Garnett Water Purification Plant</i>	24
Operations .....	25
Maintenance .....	26
Laboratory .....	27
<i>Financial Aspects of the Project</i>	28
Annual Costs and Revenue .....	29
Improvement District No. 4 Funds .....	30
Well Registration and Collection of Groundwater Charges.....	30
ID4 Financial Management Plan .....	30

## Tables and Figures

32

2011 ID4 Water Supplies, Exchanges, and Deliveries (acre-feet) .....	33
ID4 Groundwater Recharge and Recovery Asset Summary .....	33
ID4 History of Purification Plant Water Use by Sources (acre-feet) .....	34
History of Groundwater Replenishment by ID4 .....	35
ID4 History of State Water Project (SWP) Entitlement and Actual Water Deliveries .....	36-37
Groundwater Production .....	38
Registered Active Wells within ID4 2002-2011 .....	39
History of ID4 Groundwater Charges (\$/Acre-foot) .....	39
ID4 Land Use 1972 - 2011 (acres) .....	40
ID4 Crop Report 2011 .....	41
Henry C. Garnett Water Purification Plant Operations Costs 2011 .....	42
Henry C. Garnett Water Purification Plant Historic Annual Operations Costs .....	42
ID4 Operations Fund .....	43-45
Treated Water 2011 .....	46-48
Source Water 2011 .....	49-51
Figure 1 .....	52
Figure 2 Hydrograph 29S/27E - 08H53 .....	53
Figure 3 Hydrograph 29S/28E - 18K01 .....	54
Figure 4 Hydrograph 30S/27E - 05D01 .....	55
Figure 5 Hydrograph 30S/28E - 03D01 .....	56

## Plates

57

Plate 1 - Land Use .....	58
Plate 2 - Purveyor Service Area Map .....	59
Plate 3 - Treated Water Service Area .....	60
Plate 4 - Water Wells and Spreading Areas .....	61
Plate 5 - Recharge Facilities Available to ID4 .....	62
Plate 6 - Elevation of Water in Wells .....	63
Plate 7 - Depth to Water in Wells .....	64
Plate 8 - Change in Groundwater Depth .....	65



# Definitions

**Acre-Foot (af)**

The quantity of water required to cover one-acre of land to a depth of one foot (325,851 gallons). This amount of water is normally used by a family of four during a one-year period for residential use.

**Agency**

Kern County Water Agency.

**Agricultural Water**

Water first used on land in the production of crops or livestock for market.

**Aquifer**

Porous water bearing stratum or zone below the Earth's surface.

**Central Valley Project**

In Kern County, this refers to the Friant-Kern Canal and its service area.

**Customers**

(Based on the new treated water contracts.)

**“Department” or “DWR”**

State of California, Department of Water Resources.

**District**

Improvement District No. 4 of the Kern County Water Agency.

**Enterprise Fund**

General operating fund used to fund ID4 operations.

**Groundwater Replenishment**

Any act of God or man which replenishes or adds water to the subsurface aquifer system.

**ID4**

Improvement District No. 4 of the Kern County Water Agency.

**MGD**

Million gallons per day.

**M&I**

Municipal and Industrial – Generally refers to water used for domestic purposes.

**“Plant” or “Purification Plant”**

Henry C. Garnett Water Purification Plant.

**Potable Water**

Water fit to drink pursuant to state and federal statutory requirements and aesthetic acceptability.

**Project Water**

Any combination of State Water Project water and additional water generated from the State Water Project or from exchanges with Kern River interests or other sources.

**Purveyors**

Company or organization which provides a domestic water supply to a group of water users on a retail basis.

**Small Groundwater Producing Facility**

Facilities which have a discharge opening not greater than two (2) inches in diameter and which do not provide water for an area in excess of 10,000 square feet.

**SWP**

The State Water Project – In Kern County, its major feature is the Edmund G. Brown California Aqueduct.

**Table A**

The amount of water from the State Water Project allocated to ID4, according to the Agency's contract with the Department of Water Resources.

**TWCEP**

Treated Water Capacity Expansion Project

**Very Small Groundwater Producing Facility**

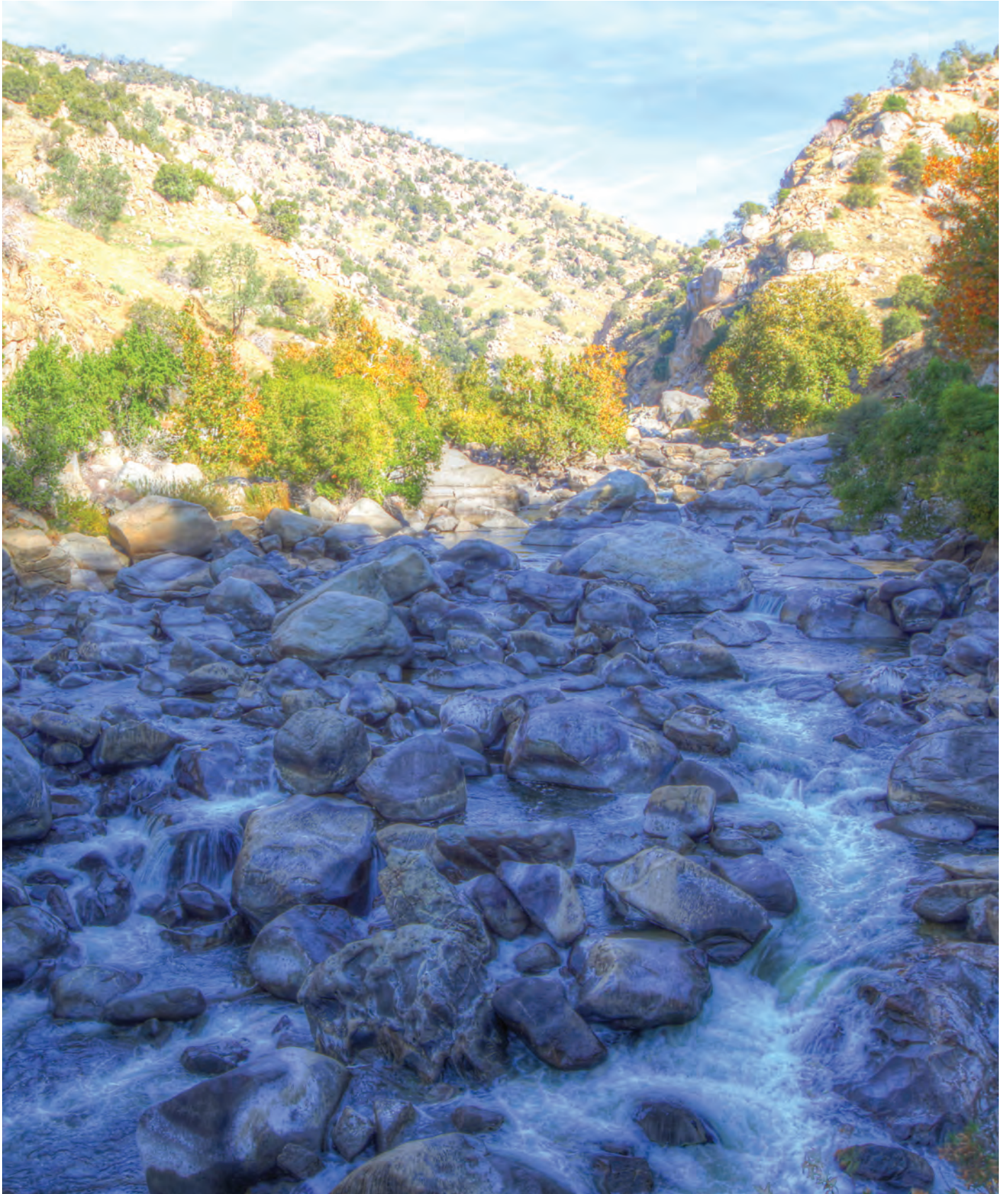
Facilities where, in the opinion of ID4 staff, the cost of collection would exceed the flat rate charge.

**Water Year**

The water year as referenced within this report refers to the first day of January through the end of December.



# *Summary & Recommendations*





Based on the information compiled and presented herein, it has been determined that the amount of agricultural water withdrawn from the groundwater supplies of Improvement District No. 4 (ID4) for the year 2011 is estimated to be 300 acre-feet (af). See the Groundwater Production Table on page 38.

- The estimated amount of all other non-agricultural water withdrawn from the groundwater supplies of ID4 for the 2011 calendar year is 80,000 af (page 38).
- 36,245 af (including Henry C. Garnett Water Purification Plant process and transportation losses) of treated surface water was delivered to water purveyors in ID4 during water year 2011 (page 34).
- The Kern County Water Agency (Agency) on behalf of ID4 was obligated by contract to pay for approximately 82,946 af of State Water Project (SWP) water in calendar year 2011 (page 36).
- If the 2012 California Department of Water Resources (DWR) SWP allocation remains at 60 percent, Agency staff estimates that 49,768 af of water will be imported into ID4. Approximately 10,850 af of this water will be recharged as conveyance losses in delivering raw surface water to the Henry C. Garnett Water Purification Plant. At time of printing, DWR SWP Table A water allocation remains at 60 percent.

Total fund accumulation in the Enterprise Fund was \$11.4 million as of July 1, 2011 and is projected to be \$10.2 million as of July 1, 2012. The total fund accumulation includes recommended reserve levels as summarized below.

Staff developed a reserve policy to identify appropriate levels of accumulation within the ID4 fund. The 2011-12 treated water rate is set at \$147 per af. The components of these reserve funds should include: \$1.5 million to cover the Henry C. Garnett Water Purification Plant equipment and replacement; \$0.5 million for Cross Valley Canal (CVC) power reserves; \$2.0 million in additional funds available for catastrophic needs of ID4; and \$0.9 million for acquisition of additional surface water supplies. Additionally, ID4 has approximately 308,818 af (page 33) stored in the Kern Water Bank, the Pioneer Project, the City of Bakersfield's (City) 2800 Acre Recharge Facility and the Rosedale-Rio Bravo Water Storage District (Rosedale) and ID4 Joint Use Groundwater Recovery Project area.

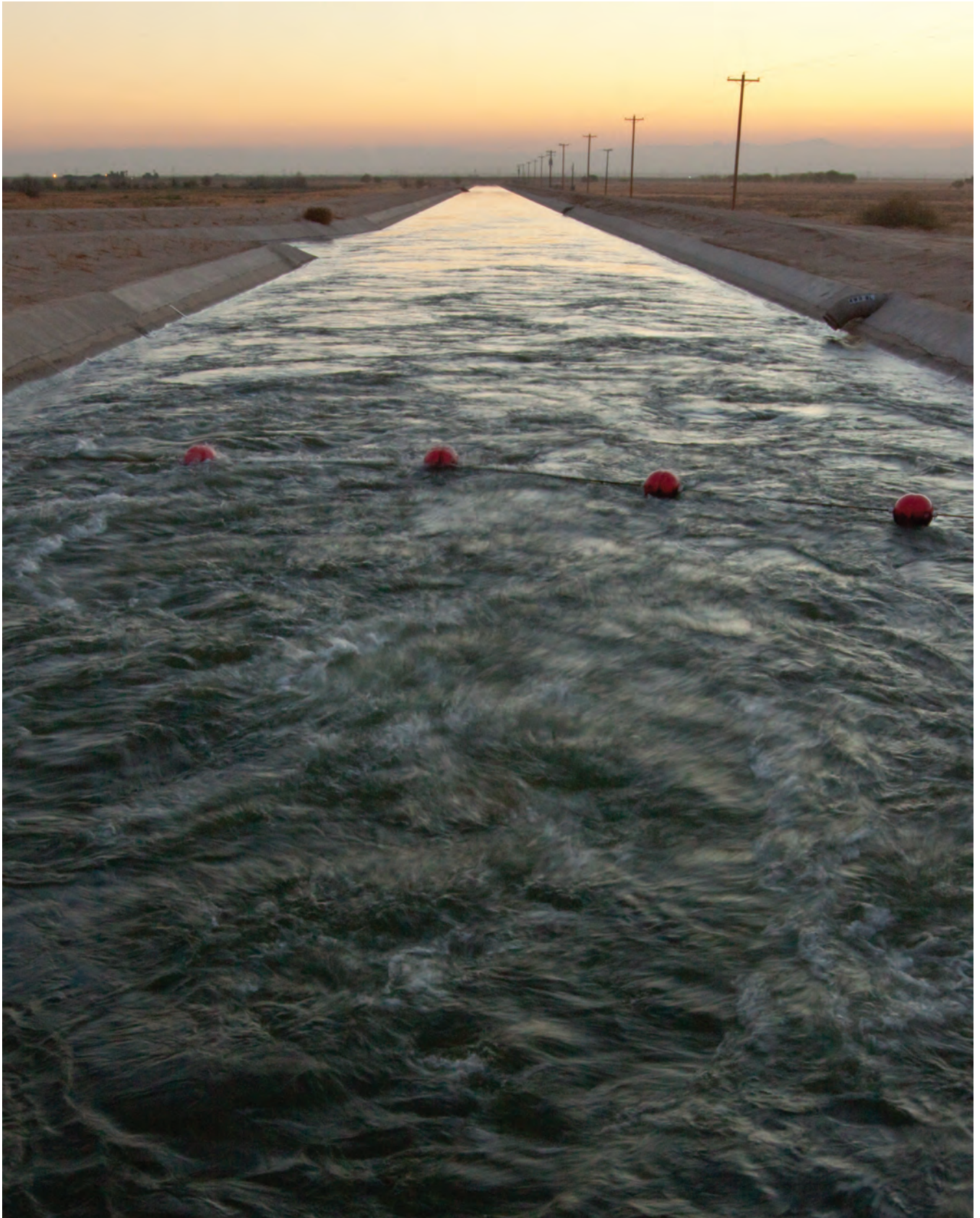
It is recommended that charges for groundwater production in ID4, for the water year commencing July 1, 2012 and ending June 30, 2013 be levied as follows:

1. Agricultural groundwater production:  
*\$18 per acre-foot*
2. All other groundwater production:  
*\$36 per acre-foot*
3. Small groundwater producing facilities:  
*\$36 (flat rate)*
4. Very small groundwater producing facilities<sup>1</sup>:  
*\$0 (no charge)*



<sup>1</sup>For administrative convenience, a flat rate annual charge of \$36 was levied for small water-producing facilities, and no charge was levied for very small water producing facilities where the cost of collection would exceed the flat rate charge.

# *Purpose*







This is the 39th in a series of annual reports on water conditions in ID4. This report is intended to provide information upon which the levying of groundwater charges for Fiscal Year 2012-13 is based. The first report, issued on October 1, 1973, detailed events leading to the formation of ID4 and formulation of a project plan for importing water from the California Aqueduct. Appended to the first ID4 report on water conditions are the full texts of the formation resolution and a resolution declaring an intention to establish groundwater charges within ID4. Appended to the 1993 report are two resolutions which amended the formation of ID4 (prior Resolution No. 17-71) by raising the maximum permissible groundwater charge to \$40 per af, thereby raising the cost of treated water to a maximum level of \$38 in excess of the maximum groundwater charge levied in a given year. These actions were superseded when the Agency Board of Directors (Board) adopted the ID4 Financial Management Plan in March 1999. The Board adopted the Revised ID4 Financial Management Plan (Revised Financial Plan) in January 2011, which replaced previous versions of the ID4 Financial Management Plan. The Revised Financial Plan updated the financial requirements and reserve policy of ID4 as a result of the Treated Water Capacity Expansion Project.

In December 1972, the Agency published a Notice of Intent to establish a groundwater charge in accordance with section 14.22 of the Agency Act 9098 (Act). Following the Act, as amended February 17, 1982, requires that [such notice]:

1. All water-producing facilities (wells) located within ID4 shall be registered with the Agency by the owner or operator.
2. The District Engineer shall prepare an annual report by February 1 of each year.
3. A public hearing shall be held on the third Monday in March regarding the Engineer's report and to receive public testimony thereon.
4. Within 30 days after the close of the hearing, the Board shall determine whether a groundwater charge will be levied and if so, shall set the charge.
5. Each owner or operator of a well shall file with the Agency, on or before January 31 and July 31 of each year, a statement of total water production for the preceding six months, and shall pay the groundwater charges as determined on the water production statement.

The Act requires a projection of estimates of water conditions and requirements for fiscal years commencing July 1. SWP operations are based on a calendar year. Local hydrologic conditions have a substantial impact on the ability of ID4 to receive and spread its SWP Table A water. Therefore, this report presents hydrologic and operational histories for back-to-back calendar years for use in projecting fiscal year supplies and requirements as required by the Act. Page 58 identifies irrigated agricultural, urban, industrial and undeveloped lands in ID4 based on a 2011 land use survey. Also shown on page 40 is the acreage devoted to each land use classification in ID4 since 1972.



# *History of ID4*



## *General*

ID4 was formed by a resolution adopted by the Agency Board on December 21, 1971, to provide a supplemental water supply for portions of the urban Bakersfield area through the importation of water from the SWP. In order to have a means for transporting this supplemental water to ID4 from the California Aqueduct, the ID4 Project included ID4's participation in the CVC. Upon reaching ID4, the imported supply was to be delivered directly to recharge areas for direct replenishment of the underlying groundwater aquifer or to the Henry C. Garnett Water Purification Plant for treatment and delivery to in-district water purveyors.

## *Creation of Improvement District No. 4*

The Agency was formed by Chapter 1003 of the Statutes of 1961. The primary purpose for creating the Agency was the establishment of a single entity in Kern County to negotiate and administer a water supply contract with the State of California for its SWP. In November 1963, to provide a firm water supply to supplement the estimated safe yield of the underground basin, the Agency contracted with DWR for a water supply for member units within Kern County, which included 77,000 af annually for ID4.

Subsequent amendments to the Act added provisions for the formation of improvement districts as needed to expedite solutions to specific problems relating to flood control, drainage, or water supply. Activities leading to the creation of ID4 were initiated by the Agency Board by adoption of Resolution No. 25-70 on December 10, 1970, which outlined the need for such an improvement district. ID4 was formed by a resolution adopted by the Agency Board on December 21, 1971 for the purpose of financing the construction of a water purification plant, related water conveyance facilities, and a portion of the cost of the CVC. Resolutions Nos. 16-71 and 17-71 were adopted by the Agency Board on December 21, 1971 to finalize formation activity and establish the boundaries of ID4 as they exist today.

On September 12, 1972, an election was held within ID4 authorizing \$17.5 million of general obligation bonds to construct ID4's share of the CVC and water purification facilities, making the contracted water supply available to the areas of need within ID4. Five water districts in the easterly portion of the San Joaquin Valley in Kern County shared in the construction of the CVC to convey their water to their respective districts.

## *Historic Conditions*

Prior to construction of the CVC, the primary water supply for all uses within ID4 was pumping groundwater. The groundwater basin underlying ID4 receives its recharge from the Kern River, which traverses ID4 from east to west, a distance of about 12 miles, through a wide, flat, permeable bed. Historically, flood flows that overflowed on lands on both sides of the river contributed further to groundwater recharge. Seepage and percolation through a number of unlined canals provided another source of recharge.

In the 1860s, when the first settlers arrived in Bakersfield, water levels were close to the surface. These levels declined from 40 to 90 feet by the 1940s and pumping lifts of 100 feet or more were common. Due to the declining water table, the quality of the groundwater in portions of ID4 degraded as poorer quality water moved into the area from adjacent lands.

Section 14.25 of the Act requires that, "... the agency engineer shall annually prepare a report which shall include, among other matters which the agency may desire, information on the availability of surface and groundwater in the improvement district, the quantity of water needed for surface delivery and for replenishment of the groundwater supplies within the improvement district for the ensuing water year, the amount of water which the agency is obligated to purchase for use in the improvement district during the ensuing water year and an estimate of the amount of groundwater to be extracted within the improvement district during the ensuing water year..."

This report addresses establishing a groundwater charge for the fiscal year commencing July 1, 2012. However, the SWP operates on a calendar year basis. Water orders and payments for water are on the calendar year. Collection of tax funds by the County of Kern and Agency bookkeeping are on a fiscal year basis. For this reason, many of the comparisons cited in this report refer to calendar year 2012, which overlaps the 2012-13 fiscal year.



# *Water Supply & Requirements*





## *Availability of Surface Water and Groundwater*

The annual surface water supply for ID4 includes a SWP Table A allocation of 77,000 af of municipal and industrial (M&I) water and 5,946 af of firm agricultural water supplies for a total of 82,946 af. The annual Table A allocation received from the SWP is subject to reduction during drought conditions and regulatory requirements for environmental protection. Unless additional facilities are constructed to increase the SWP yield, Table A allocation reductions will occur more frequently in future years.

The Board recognized the need for advanced planning to meet the water demand of a growing community and adopted Resolution No. 13-83 on June 23, 1983, stating that the Agency will do everything in its power to provide the urban Bakersfield area additional potable surface water supplies. The Agency completed studies to determine the timing and extent of needs for such additional potable water supplies and the best way to meet these needs. Resolution No. 21-93, adopted on May 27, 1993, established policy for meeting future water supply requirements of ID4 and the joint City/County 2010 General Plan Area.

On May 26, 1988, the Board adopted Resolution No. 12-88 allocating to ID4 10,276 af of firm agricultural water and 1,554 af of surplus agricultural water. This resolution provides 35 cubic feet per second (cfs) of additional flow capacity in the California Aqueduct through Reach 16 to the forebay of the A.D. Edmonston Pumping Plant. This water had been previously contracted to Wheeler Ridge-Maricopa Water Storage District.



In 1996, the Kern Water Bank property was transferred to the entities participating in the Kern Water Bank Authority. As payment for its share of the Kern Water Bank, ID4 returned 4,330 af of its SWP firm agricultural Table A allocation to DWR. This reduction is reflected in current ID4 SWP Table A amounts.

Other supplies utilized to maximize replenishment operations in normal to wet years include interruptible water from the SWP (Article 21 water), water that is surplus to the Central Valley Project, water available from the Friant-Kern Canal and Kern River water. The amounts of 2011 SWP Table A water received are shown on page 33, together with adjustments for exchanges and purchases. Actual historic deliveries are shown on page 36. ID4 actively negotiates exchanges with Kern River interests for a supply of Kern River water.

Kern River supplies are delivered to agricultural water users in areas served by the City and Kern Delta Water District (Kern Delta) within ID4. Most of these agricultural service areas have dual supply systems allowing for the use of groundwater in dry years and river water in wet years. In 2011, 2,953 af of river water were supplied for agricultural use within ID4 by the City and Kern Delta.

Treated municipal effluent irrigates agricultural land in the southeast area of ID4. City and county sewage treatment plants in the southeast area processed approximately 20,000 af in 2011, which were used in areas south of Brundage Lane and east of Cottonwood Road.

## *Water Needed for Surface Delivery and Groundwater Replenishment*

In 2012 ID4 needs about 38,750 af for direct deliveries to the purveyors, with an additional 10,850 af for internal purification plant processing and canal losses to allow for maximum non-interruptible supply to the Henry C. Garnett Water Purification Plant. Water needed for surface delivery will be SWP water contracted for by the Agency on behalf of ID4 as described earlier in this report and/or Kern River water obtained by purchase or exchange and/or water recovered from ID4's banking projects to augment surface supplies.

SWP Table A water supplies not required for the Henry C. Garnett Water Purification Plant are normally utilized for groundwater replenishment. As of January 2012, the Kern River watershed is projected to be about 60 percent of normal. SWP supplies are projected to be at least 60 percent of SWP Table A water amounts, which results in an allocation to ID4 of 49,768 af. This supply is sufficient for full deliveries from the Henry C. Garnett Water Purification Plant. Additional supplies of approximately 168 af will be recharged. In the past, natural replenishment of the basin's groundwater supply derived primarily from Kern River flows. When a dry year follows a period of heavy replenishment, rapid declines in groundwater levels adjacent to the river are noted as mounds dissipate.

## *Water Obligated for Purchase by the Agency*

The Agency was obligated to pay for 82,946 af on behalf of ID4 in 2011.

## *Groundwater Conditions*

Data collected by Agency staff indicates an average increase in groundwater levels of 5.3 feet in 2011. In previous years, this change in groundwater levels has been calculated from contour maps generated from data collected in the Fall (September through October). Fall data can produce an erroneous interpretation in these calculations due to the large amount of groundwater extraction occurring in and adjacent to ID4 during this time. A much better period from which to generate maps is from mid Winter through early Spring (January through March) due to the decrease in groundwater demand (pumping). Starting with this report, groundwater level maps and the average change in groundwater levels will represent Spring conditions. (See Figure 1).

The average depth is weighted to account for the non-uniform density of monitored wells within three distinct areas of the groundwater service area of ID4. These three areas consist of the area approximately north of Rosedale Highway, the area approximately south of Stockdale Highway and the Kern River area. These three areas are considered separately due to varying groundwater recharge practices, different groundwater extraction demands and geological considerations with respect to the relative ease of subsurface migration of groundwater. Pages 63-65 depict the water surface elevation and depth-to-groundwater respectively.



## *Estimated Groundwater Extractions*

Groundwater extraction is closely related to land use in ID4. Agency staff has conducted annual land use surveys since 1972. Data of historical land use in ID4 is shown on page 40. The ID4 crop report is shown on page 41 and shows agricultural land use by crops type produced in ID4 in 2011. The estimated amount of groundwater extracted in 2011 was 80,300 af (page 38).

## *Groundwater Replenishment*

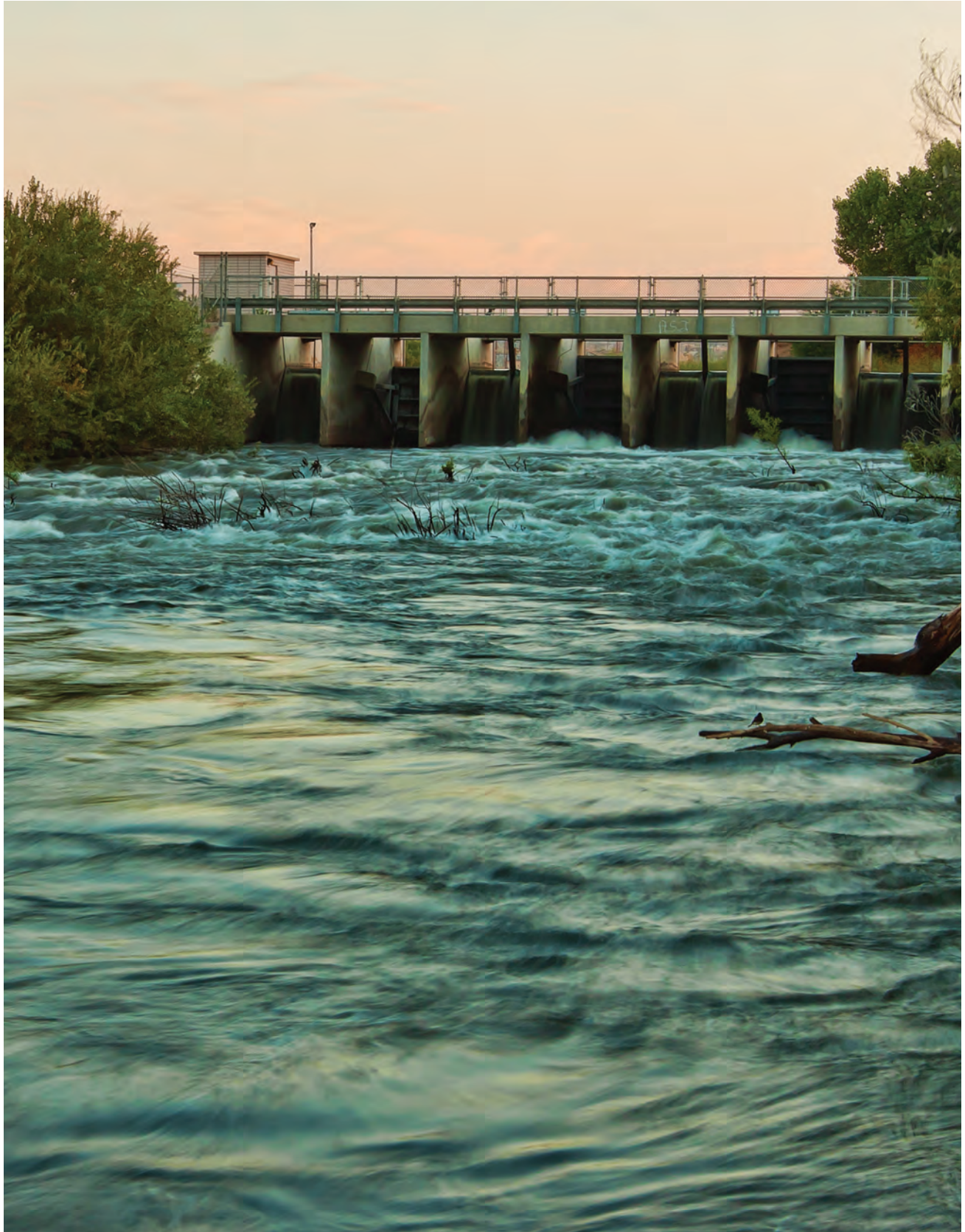
ID4 provides a treated surface water supply to replace a portion of groundwater pumping. The replaced pumping, or in-lieu recharge, combined with imported SWP or exchanged Kern River water recharges the underground aquifer. Recharge made possible by water exchanges with river interests commenced in 1971. Recharge using SWP water commenced in 1975 with the completion of the CVC. Absent environmental or drought-induced SWP Table A water supply reductions, the average annual amount available for replenishment is about 23,000 af. Actual amounts spread may vary from about 8,000 af of unavoidable seepage losses to over 90,000 af, depending on local and SWP water conditions and regulation afforded by exchanges.

Since 1971, ID4 has recharged 1,734,481 af. The SWP Table A water available for recharge or total in the same period was 875,551 af. The difference 858,930 af, was obtained from exchanges with Kern River or Friant-Kern Canal interests and banked water imports.

In District recharge for 2011 was 37,668 af (page 35). The final SWP Table A water allocation was 80 percent and the Kern River runoff was 201 percent.



# Operations



# *Banking*

## *Kern Water Bank*

ID4 has a 9.62 percent interest in the Kern Water Bank recharge and recovery facilities as a result of the 1996 agreement between project participants, the Agency and DWR. The number of recovery wells currently available is 86, yielding a total annual recovery capacity of approximately 230,000 af. The maximum annual recharge capacity of the project is about 450,000 af. ID4 recharged 45,604 af in the Kern Water Bank in 2011.

## *Pioneer Project*

ID4 has a 10 percent interest in the Agency-owned Pioneer Project recharge and recovery facilities as a result of the 1998 Pioneer Participation Agreement. The total number of completed wells on the project is 35 which yield a total annual recovery of approximately 100,000 af. The maximum annual recharge capacity of the project is about 146,000 af. ID4 recharged 10,720 af in the Pioneer Project facilities in 2011.

## *ID4 Recovery Program*

ID4 currently owns four wells on the City's 2800 Acre Recharge Facility, located west of Allen Road and south of Stockdale Highway. These wells were drilled and cased in 1999 and remained idle during 2000 and 2001. In 2003, the project was completed with the installation of pumps, motors and pipelines. ID4's overall recovery capacity for this project is 20 cubic feet per second (cfs) or 12,000 af annually.

## *Allen Road Complex Well Field*

ID4 owns and operates seven wells located along the north side of the Kern River between Allen Road and Calloway Drive. These wells may be used as part of a joint program with the City to recover previously recharged water for delivery into the Kern River channel for recreational purposes during dry years. ID4 can also use the wells to enhance potential exchanges or for water quality benefits for the Henry C. Garnett Water Purification Plant. ID4 did not utilize these wells for any water management programs in 2011.

## *Improvement District No. 4 - Rosedale Rio Bravo Joint Use Recovery Program*

The Rosedale and ID4 Joint Use Groundwater Recovery Program (JURP) facility includes seven recovery wells with a total capacity of 35 cfs. ID4 operates this well field to recover banked water for two of Rosedale's partners, Kern-Tulare Water District and Arvin-Edison Water Storage District with a maximum annual recovery capacity of 21,000 af. The JURP Agreement also provides ID4 with the ability to exchange surface water for an equal amount of banked water in the JURP area. In 2011, Rosedale recharged approximately 15,000 af of water into the JURP area on behalf of its banking partners.



## Exchanges

Exchanges of SWP water for Kern River and Friant-Kern Canal water will typically improve the quality of raw water delivered to the Henry C. Garnett Water Purification Plant and water spread for replenishment of the groundwater aquifer. Also, there are savings to ID4 in reduced CVC pumping costs when the exchange entity can accept return of ID4 water in the California Aqueduct, or at locations west of the Henry C. Garnett Water Purification Plant. These power savings occur when ID4 does not have to pump the water easterly, from the SWP, through the seven lift stations on the CVC to bring it into ID4. The current power costs averaged for the year are \$4.00 per af at pumping plants one through seven, resulting in a total average cost of \$28.00 per af when water is delivered the full distance from the California Aqueduct to the terminus of the CVC Extension. 2011 Exchange activity is summarized on page 33.

ID4 also continued treated water deliveries to the City by utilizing surplus capacity in the Henry C. Garnett Water Purification Plant. The deliveries were made with City-owned water and are shown as part of the exchange activity on page 33. A total of 349 af were purified and delivered to customers in the City service area in 2011.



## Summary of Water Supply Operations

The total amount of direct, in-lieu and Kern River recharge incidental to ID4 operations since 1971 is shown on Figure 1 (page 52). This includes banking programs outside ID4 boundaries, which also benefit ID4.

Total ID4 In-district Recharge (Direct Recharge).....	1,734,481
Total Treated Water Supply (In-lieu Recharge) .....	942,288
Subtotal of ID4 Project Recharge Activities .....	2,676,769

Recharge of water incidental to the ID4 Project effort also occurs during Kern River flood years and through conveyance of Kern River water to others.

Subtotal of ID4 Project recharge activities .....	2,676,769
Incidental canal & river recharge .....	2,985,511
Total recharge within ID4 .....	5,662,280
Total reported groundwater production within ID4 .....	(3,023,486)
Net balance for ID4 Project duration .....	2,638,794

\*All values above are in acre-feet





# *Planning & Engineering*





## *Treated Water Capacity Expansion Project*

On September 21, 2005, Agreements for a Water Supply (Agreements) between the Agency and California Water Service Company (Cal Water), the City, East Niles Community Services District (East Niles) and North of the River Municipal Water District (North of the River) were executed. The Agreements included increasing treated water deliveries from the current level of 25,000 af per year to 53,000 af per year over a 30-year period. New water treatment, pumping and transmission facilities were constructed in order to produce and deliver the water contracted by Project Participants. The Treated Water Capacity Expansion Project (TWCEP) was developed to meet the infrastructure needs. The TWCEP included the expansion of the existing Henry C. Garnett Water Purification Plant, the North Feeder Facility, the East Feeder Facility and the construction of the Northwest Feeder Facility. All project components were completed in 2011.

## *Henry C. Garnett Water Purification Plant Expansion Project*

The Henry C. Garnett Water Purification Plant Expansion Project (Expansion Project) increased plant peaking capacity from 38 million gallons per day (mgd) to 72 mgd. On May 20, 2008, staff issued the Notice to Proceed to SSC Construction, Inc. (SSC) for the construction of the Expansion Project. During 2011, SSC focused work on the facility described below.

**Treatment Train A (Train A):** The original 60,000-square-foot conventional treatment facility designed to treat up to 38 mgd and operates parallel to the newly constructed Train B. Train A has a hydraulic pump diffusion flash mixer, three flocculation basins, three sedimentation basins and six filter basins. The dual media filter basins utilize anthracite and sand for filtration. SSC performed demolition work on the existing facilities slated to be replaced or upgraded through the Expansion Project. New concrete interior walls were constructed for the flocculation basins to improve the mixing energy from the flocculators. The existing filter underdrain system was inspected, repaired and prepared for new filter media. SSC also installed new facility piping, process instrumentation and an operational control system. Train A was completed in June of 2011.

The Expansion Project was completed in September 2011, with an overall estimated cost of \$80 million.





# *Henry C. Garnett Water Purification Plant*



# Operations

In 2011, the Henry C. Garnett Water Purification Plant delivered 33,849 af of water for domestic consumption. This represents a 13 percent increase when compared to the amount delivered in 2010 (29,949 af). Additional water was used for filter backwash, plant process use, sludge discharge, evaporation, TWCEP construction activities and losses.

The peak production flow occurred on July 16, 2011 and amounted to 48.1 mgd. This represents 67 percent of the expanded maximum design flow of 72 mgd. The Henry C. Garnett Water Purification Plant did not operate at flows greater than design capacity in 2011.

The Henry C. Garnett Water Purification Plant's chemical costs were 64 percent more in 2011 than 2010 (\$737,123 in 2011 and \$449,778 in 2010). This represents an incremental cost increase of approximately \$7 per af of water delivered for domestic purposes. This change is a result of changes in source water quality.

In 2011, chemicals consisting of sodium hypochlorite, aluminum sulfate, sodium hydroxide, cationic polymer, powdered activated carbon, zinc orthophosphate and sulfuric acid were used for water treatment processes. A detailed accounting of chemical consumption and a complete breakdown of the 2011 and historical operating costs is shown on page 42. A history of water use by source is on page 34.



In 2011, the final components of the TWCEP were constructed and readied for service. Agency staff worked with various contractors to test newly installed equipment and instrumentation. Agency staff also developed standard operating procedures for the startup and testing of Train A. The standard operating procedures were reviewed with inspectors from the California Department of Public Health (CDPH) prior to their inspection of Train A and other TWCEP facilities. On June 22, 2011, after demonstrating Train A was producing water in accordance with State and federal drinking water regulations, Agency staff received CDPH permission to combine treated water from Train A with treated water from Train B for delivery to ID4 purveyors.

Agency staff continued to use copper sulfate instead of potassium permanganate for algae control in the temperature equalization pond. In 2011, the utilization of copper sulfate as an oxidant continued to show a significant cost savings compared to potassium permanganate, with no impact to water quality.

Agency staff also updated the Henry C. Garnett Water Purification Plant operations manual to include instructions and schematics for the supervisory control and data acquisition (SCADA) system and new equipment.

Agency staff performed the semiannual well runs within ID4. This included static water level monitoring of hundreds of wells in the metropolitan Bakersfield area.

Agency staff continued to operate the ID4 Solar Photovoltaic Project (Solar Project) in 2011. The Solar Project produced a total of 1,661 megawatt-hours of energy (MWh), earning rebates of approximately \$801,795 through participation in the California Solar Initiative (CSI) and saving \$175,021 through energy offset production in 2011.



The Solar Project began producing energy in March 2009. Annual summaries of the energy produced, CSI rebates earned and energy cost offsets are shown in the following table.

ID4 Solar Project Operations

Year	MWh Produced	CSI Rebate	Energy Cost Offset
2009	1,286	\$ 622,955	\$ 149,343
2010	1,602	\$ 773,818	\$ 171,503
2011	1,661	\$ 801,975	\$ 175,201
<b>Totals</b>	<b>4,549</b>	<b>\$ 2,198,748</b>	<b>\$ 496,047</b>

## Maintenance

Agency staff assisted with the completion of TWCEP construction activities. Staff was responsible for locating existing underground facilities, repairing damaged underground facilities, providing technical and physical assistance with facility shutdowns and restarts, addressing site security issues and providing disinfection oversight. Staff continued to perform corrective and preventive maintenance to existing ID4 facilities and drafting and implementing preventive maintenance procedures for the newly installed facilities and equipment. Work began on a study of equipment reliability and failure analysis of all key operational components.

Staff assisted in the startup and testing activities for the start-up of Train A. Staff provided the oversight and participation in the piping disinfection, filter media placement, basin filling and all equipment start-up. Staff oversaw the installation of a new foam roofing system for the treatment plant control building. Staff also continued to participate in the integration and development of the new SCADA system and assisted in the detailed testing of all electrical control system wiring loops and connections.

The Northwest Feeder Pipeline and Pumping Station continued to operate and provided increased water deliveries to the northwest Bakersfield area. Agency staff refined the proper operating ranges as the City and Cal Water increased deliveries and demands from the Northwest Feeder Pipeline. Staff also continued weekly pipeline surveillance and preventive maintenance activities on the North, East and Northwest Feeder pipelines.

Agency staff provided assistance and technical oversight with the operation of the newly installed facilities and equipment related to the North and East Pump Station Project. Staff worked to refine the operational set points and system parameters and incorporated the new equipment into the preventive maintenance system.

Agency staff conducted weekly and monthly monitoring of the Electrical Service Entrance facility. Agency staff continued the process of drafting and implementing new preventative maintenance tasks for the complex array of electrical equipment, controls and switchgear. Agency staff conducted weekly inspections and biweekly testing of the two 2.0 megawatt standby generators and began installing new controls for the original 1.75 megawatt standby generator. Agency staff also began collecting electrical data and information to conduct a final treatment plant facility electrical arc/flash and protective relay coordination study to incorporate all newly installed facilities.



## Laboratory

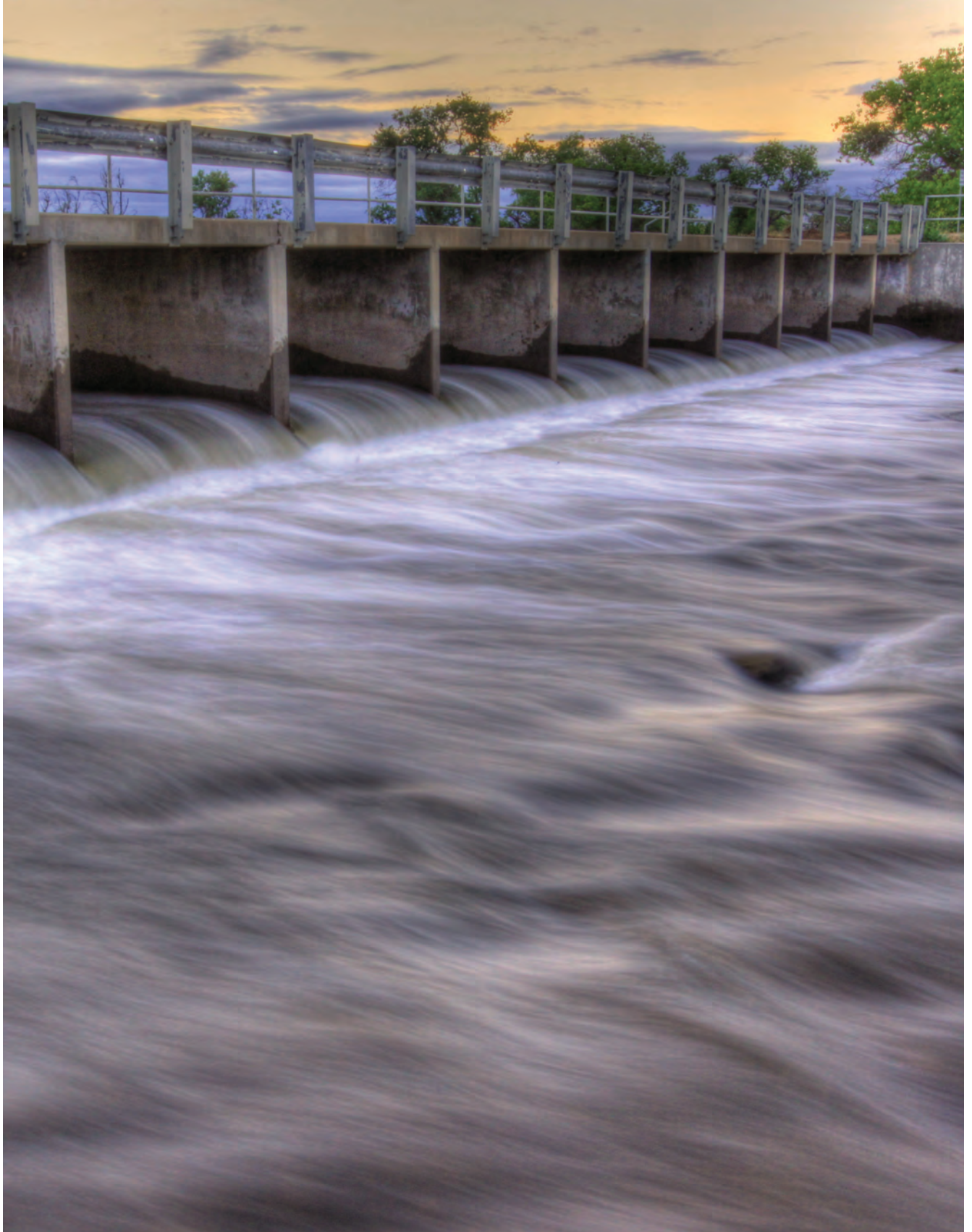
Title 22 and constituents of concern analyses were performed on the Henry C. Garnett Water Purification Plant treated and source water. Treated and source water samples were also analyzed quarterly for volatile organic chemicals (VOC), general mineral, physical, metal and inorganic nonmetallic constituents; and monthly for general mineral, physical and inorganic nonmetallic constituents. The distribution system was monitored weekly for coliform bacteria and physical constituents, monthly for total organic carbon (TOC) and total trihalomethanes (TTHM), and quarterly for regulated haloacetic acids, TOC and TTHM constituents.

Kern River sanitary survey samples were collected quarterly and analyzed for general mineral, physical, coliform bacteria, TOC, dissolved oxygen and VOC constituents. Lake Isabella was monitored for VOCs following all holiday weekends and Lake Ming was monitored periodically for VOCs following any drag boat races.

Taste and odor samples were analyzed weekly in the warmer months and monthly in the cooler months in an effort to detect and avoid odor incidents. Multiple batches of copper samples were analyzed as a result of aquatic growth control measures occurring on the temperature equalization pond. Samples collected from the Friant-Kern Canal, temperature equalization pond and Cross Valley Canal gulf box culvert bypass were analyzed for mineral, physical, metal, inorganic nonmetallic, TOC and VOC constituents of concern. Samples were collected quarterly from the Kern River and forwarded to a contract laboratory for analysis of radionuclide constituents associated with the nuclear power plants damaged by the Japanese tsunami.



# *Financial Aspects of the Project*





ID4 is an original participant in the construction of the CVC to convey water to the Henry C. Garnett Water Purification Plant and to the Kern River for groundwater replenishment. CVC construction was completed in 1976 and on February 29, 1980, Fox & Company completed a final construction cost audit. The audit was reviewed and accepted by the Agency Board. Total cost of the CVC was \$22,777,873, of which ID4’s share was \$6,833,362.

Also, Fox & Company audited the ID4 construction fund to include the original Henry C. Garnett Water Purification Plant and treated water pipelines. This audit was completed June 30, 1982. Updated construction costs since the two Fox & Company Audits are summarized as follows:

CVC (ID4 share).....	\$7,132,899
Purification Plant and Conveyance Facilities .....	\$25,755,025
Total .....	\$32,887,924

*Annual Costs and Revenue*

Cash flow for the fiscal year ending June 30, 2011, for all ID4 funds together with a forecast of cash flow conditions for the next fiscal year is shown on pages 43-45. These projections are subject to change based on capital projects deemed necessary to the continued operation of ID4. The Agency Board adopted Resolution 04-11 which incorporated the Revised Financial Plan and established groundwater charges as well as a long-term surcharge on treated water rates. The new rates are projected to generate adequate revenues for the continued operation of the ID4 Project, while meeting ID4 debt service coverage requirements from the financing obtained to construct the TWCEP.

ID4 continues to look for ways to provide a supplemental water supply to metropolitan Bakersfield in a cost effective manner. Under action taken by the Agency Board in 1996, Zone of Benefit credits are authorized to be used for the purchase of additional water from the State or federal projects. This measure was taken to mitigate the inability of the SWP to deliver 100 percent of Table A amounts annually. ID4 also works to reduce water pumping costs by exchanging SWP water for Friant-Kern and Kern River water. An optimum exchange can eliminate power cost for CVC pumping and potentially lessen the quantity of chemicals applied in the purification process. Chemical costs are affected substantially by the source and condition of the raw water. The availability of most exchanges cannot be predicted; therefore power and chemical costs are budgeted conservatively by assuming use of the CVC for all but those exchanges currently in effect.





## *Improvement District No. 4 Funds*

ID4 has four income sources managed within three fund accounts:

1. The ID4 Bond Fund was established to account for the receipts and disbursements of money needed to comply with the interest and redemption requirements of the bonds issued to construct the TWCEP. This fund will continue until the settlement of the debt incurred to construct the TWCEP. The interest and principal payments are being paid through a Capital Facilities Charge (CFC) as provided by the Agreements.
2. The Zone of Benefit No. 7 was established in accordance with the SWP contract with the Agency dated November 15, 1963, to account for property taxes collected and interest earned on money held. Zone of Benefit No. 7 is used for purchase of State or federal water supplies. The 2010-11 tax rate (per \$100.00) is 0.031450.
3. The Enterprise Fund is an operations fund established to account for money necessary for operation of the Henry C. Garnett Water Purification Plant, the treated water distribution system, groundwater replenishment and ID4's share of CVC costs. Expenditures are primarily for current day-to-day operating expenses and operating equipment. Revenues are recorded by source; principally water sales, groundwater pumping charges and interest earned on reserves. Revenues are derived from groundwater and treated water charges. The 2010-11 charges for each water type were \$17.50 per af for produced agricultural groundwater and \$35 per af for all other types of produced groundwater, and sales of treated water were at the rate of \$150 per af.

ID4 has no other regular revenue sources other than those described above. Money from the Enterprise Fund can be transferred into either or both of the other two funds to reduce the ad valorem tax burden, but excess revenues collected in the ID4 Bond Fund and Zone of Benefit No. 7 funds must remain in those funds. The Enterprise Fund accumulation of July 1, 2011, was \$11.2 million including reserves of about \$1.5 million for equipment replacement, \$0.5 million for CVC power reserves, \$2.0 million for catastrophic needs of ID4 and \$0.9 million for acquisition of additional surface water supplies.

The present level of groundwater charges and sales of treated water are projected to yield approximately \$9.7 million. It is anticipated that the operating expenses of ID4 will exceed the estimated revenues in 2011-12 by approximately \$1.1 million, mainly due to the costs associated with the construction of capital improvement projects within ID4.

## *Well Registration and Collection of Groundwater Charges*

Wells within ID4 are registered pursuant to Section 14.24 of the Agency Act. (See page 39)

On July 1, 2011, agricultural groundwater charges were \$17.50 per af, and charges for all other groundwater extractions were \$35 per af. For administrative convenience, a flat rate annual charge of \$35 was levied for small water producing facilities and no charge was levied for very small water-producing facilities where the cost of collection would exceed the flat rate charge.

## *ID4 Financial Management Plan*

On January 26, 2011 the Board adopted the Revised Financial Plan which updated the previous versions of the ID4 Financial Management Plan. The Revised Financial Plan provides detail on the principles and practices to be followed in administering the financial resources of ID4. The Revised Financial Plan identifies the need for a long-term surcharge on treated water rates to address increasing costs associated with operation of the Henry C. Garnett Water Purification Plant and to meet ID4's debt repayment obligation. With the adoption of the Revised Financial Plan the Board authorized the setting of rates and charges to ensure sufficient revenues to continue the ID4 project.

## *Refinancing of General Obligation Bonds*

In November 2006, the Agency successfully retired the remaining balance of its \$17.5 million general obligation bond used to construct the Henry C. Garnett Purification Plant, the treated water distribution system and ID4's share of the CVC.

## *Sale of Certificates of Participation for Capital Projects*

In 2006, ID4 issued \$27 million in water revenue Certificates of Participation (COP) to fund \$22.5 million of the Treated Water Capacity Expansion costs and refund the 1999 certificates of participation. In 2008, ID4 issued an additional \$121 million in water revenue COPs to fund capital improvement projects associated with the TWCEP. The COPs will be retired in 30 years. In 2006, ID4 also entered into a low-interest loan agreement with the State of California Department of Water Resources Safe Drinking Water State Revolving Fund (SDWSRF) Program for \$2.82 million to fund the Oswell Bypass Project. The SDWSRF loan payments will become due in 2010 and retire in 2030. The SDWSRF loan is a parity obligation to the 2006 COPs.

Money to be used for the repayment of debt is provided for in the Agreements. The Agreements, and subsequent project agreements, include a contract provision for the biannual payment of a CFC to charge purveyors for all capital facility costs, including principal, interest and other costs associated with repayment of any debt incurred in the development and construction of the TWCEP. The Agreement will be effective through 2035 or until the COPs and any additional financing for the TWCEP are paid in full. Under the Agreements, each purveyor is responsible for its proportionate share of capital costs. The CFC is considered a "general obligation" expense of the purveyor, regardless of the amount of water delivered or whether the capacity is actually required for delivery of the purveyor's water, and whether or not the TWCEP is completed.

### Outstanding Bond Issues (As of March 1, 2011)

<u>Series</u>	<u>Dated</u>	<u>Interest Rate</u>	<u>Original Par</u>	<u>Final Maturity</u>	<u>Outstanding (as of 3/1/11)</u>
Water Revenue COP, Series 2006A	4/19/2006	4% - 4.6%	\$17,150,000	5/1/2036	\$15,235,000
Water Revenue COP, Series 2006B (Taxable)	4/19/2006	5.87%	\$10,550,000	5/1/2036	\$9,975,000
Water Revenue COP, Series 2008A	5/6/2008	3% - 5%	\$84,365,000	5/1/2038	\$81,545,000
Water Revenue COP, Series 2008B (Taxable)	5/6/2008	4.838%-6.649%	\$36,555,000	5/1/2038	\$35,615,000

# *Tables and Figures*



## 2011 ID4 Water Supplies, Exchanges, and Deliveries (acre-feet)

ID4 SUPPLIES	SWP <sup>1</sup>	SWP by Exchange <sup>2</sup>	Kern River	SWP by Exchange <sup>3</sup>	Bank Recovery	Total
SWP (M&I)	61,600					61,600
SWP (Ag)	4,757					4,757
Article 21	14,639					14,639
Agency Table A	774					774
Carryover 2010	8,182					8,182
Turnback Pool A	383					383
Turnback Pool B	1,079					1,079
Lower River			48,842			48,842
Friant-Kern Section 215 Recovery				8,377		8,377
<b>Subtotal</b>	<b>91,414</b>	<b>-</b>	<b>48,842</b>	<b>8,377</b>	<b>-</b>	<b>148,633</b>
<b>ID4 EXCHANGES / OBLIGATIONS</b>						
Agency Lower River	(7,000)		7,000			-
Belridge WSD	(803)		803			-
Berrenda Mesa WD	(705)		705			-
City of Bakersfield	(6,100)	6,100				-
City of Bakersfield NW Feeder		349				349
Kern Tulare WD	(3,000)	3,000				-
Kern Tulare WD 2010	(228)					(228)
Kern Tulare WD 2011	(27,250)	27,250				-
North Kern WSD Category A		940				940
North Kern WSD Instantaneous (Feb 3-14)	(946)	946				-
Pastoria Energy	(56)					(56)
Tehachapi-Cummings County WD	(584)		584			-
<b>Total Exchanges/Obligations</b>	<b>(46,672)</b>	<b>38,585</b>	<b>9,092</b>	<b>-</b>	<b>-</b>	<b>1,005</b>
<b>Available Supplies</b>	<b>44,742</b>	<b>38,585</b>	<b>57,934</b>	<b>8,377</b>	<b>-</b>	<b>149,638</b>

ID4 DELIVERIES	SWP <sup>1</sup>	SWP by Exchange <sup>2</sup>	Kern River	SWP by Exchange <sup>3</sup>	Bank Recovery	Total
Henry C. Garnett Water Purification Plant	2,473	20,751	13,021			36,245
In-District Transportation Recharge	762	5,252	4,188			10,202
In-District Recharge	8,471	12,581	6,244	172		27,468
Kern Water Bank	23,103		16,500	6,001		45,604
Pioneer Project	8,527			2,193		10,720
California Aqueduct			5,000			5,000
Out of District Transportation Losses	127			11		138
Lake Isabella Evaporative Losses			2,299			2,299
Carryover 2012	1,280		10,682			11,962
<b>Total Deliveries</b>	<b>44,742</b>	<b>38,585</b>	<b>57,934</b>	<b>8,377</b>	<b>-</b>	<b>149,638</b>

## ID4 Groundwater Recharge and Recovery Asset Summary

Groundwater Banking Facility	ID4 Interest	Annual Recharge Capacity	Annual Recovery Capacity <sup>6</sup>	ID4 Recharge Capacity	ID4 Recovery Capacity	Summary of Banked Water
Kern Water Bank	9.62%	450,000	230,000	43,290	22,126	186,952
Pioneer Project	10%	146,000	100,000	14,600	10,000	56,658
ID4 Banking Wells <sup>4</sup>	100%		12,000		12,000	62,184
ID4/Rosedale Joint Use Recovery Project <sup>5</sup>	22.2%		21,000		4,662	1,745
Allen Road Well Field	100%		36,000		36,000	
<b>Total</b>		<b>596,000</b>	<b>399,000</b>	<b>57,890</b>	<b>84,788</b>	<b>307,539</b>

<sup>1</sup> SWP allocation for 2011 was 80%.

<sup>2</sup> SWP water by exchange with Kern River interests.

<sup>3</sup> SWP water by exchange with Friant-Kern interests.

<sup>4</sup> ID4 recovery wells and banked water in City of Bakersfield's 2800 Acres Recharge Facility.

<sup>5</sup> First priority for 10 cfs of recovery capacity.

<sup>6</sup> Recovery capacity varies with respect to depth to groundwater.

## ID4 History of Purification Plant Water Use by Sources (acre-feet)

Year	State Water Project	State Water Project by Exchange <sup>1</sup>	Kern River	State Water Project by Exchange <sup>2</sup>	Recovered	Total
1975	-	-		-	-	-
1976	-	-		-	-	-
1977	15,950	-		-	-	15,950
1978	8,329	15,607		-	-	23,936
1979	5,347	21,078		-	-	26,425
1980	4,288	18,551		-	-	22,839
1981	20,457	3,407		-	-	23,864
1982	3,584	21,488		-	-	25,072
1983	1,287	23,317		-	-	24,604
1984	21,068	5,200		-	-	26,268
1985	942	23,331		-	-	24,273
1986	1,487	22,967		-	-	24,454
1987	1,974	23,534		-	-	25,508
1988	7,971	21,360		-	-	29,331
1989	11,844	15,593		-	-	27,437
1990	24,728	2,694		-	-	27,422
1991	2,467	9,146		-	7,719	19,332
1992	6,830	8,442		-	12,241	27,513
1993	4,653	23,414		2,883	-	30,950
1994	4,030	20,680		715	4,186	29,611
1995	2,528	28,883		-	222	31,633
1996	24	28,527		1,387	-	29,938
1997	-	25,416		7,980	-	33,396
1998	-	26,510		1,906	-	28,416
1999	-	28,340		-	-	28,340
2000	132	29,023		-	-	29,155
2001	3,503	7,579		-	15,810	26,892
2002	5,228	21,327		-	1,194	27,749
2003	9,826	14,011		-	2,111	25,948
2004	4,282	14,419		-	6,693	25,394
2005	1,967	24,320		-	787	27,074
2006	7,160	18,412		-	-	25,572
2007	4,826	14,874		-	7,301	27,001
2008	1,462	25,000		-	-	26,462
2009	-	28,335		-	-	28,335
2010	718	29,231		-	-	29,949
2011	2,473	20,751	13,021	-	-	36,245
<b>TOTAL</b>	<b>191,365</b>	<b>664,767</b>	<b>13,021</b>	<b>14,871</b>	<b>58,264</b>	<b>942,288</b>

<sup>1</sup> SWP water by exchange with Kern River interests.

<sup>2</sup> SWP water by exchange with Friant-Kern interests.

# History of Groundwater Replenishment by ID4

All units in acre-feet unless otherwise noted.

Year	% Allocation	Kern-River Runoff (% of mean) <sup>4</sup>	SWP	Recovery <sup>1</sup>	SWP by Exchange <sup>2</sup>	Kern River	Friant-Kern <sup>3</sup>	In District Recharge	Banked Water	Total
1971					6,400		-	6,400	-	6,400
1972					11,000		-	11,000	-	11,000
1973					67,500		-	67,500	-	67,500
1974					10,900		-	10,900	-	10,900
1975		81	5,700		-		-	5,700	-	5,700
1976		23	27,800		-		-	27,800	-	27,800
1977		20	6,400		2,000		-	8,400	-	8,400
1978	100%	230	1,470		37,840		2,990	42,300	-	42,300
1979	100%	88	60,680		36,200		1,120	98,000	-	98,000
1980	100%	208	23,210		23,230		3,460	49,900	-	49,900
1981	100%	53	55,270		2,350		480	58,100	-	58,100
1982	100%	168	5,480		35,810		2,110	43,400	-	43,400
1983	100%	325	1,250		10,860		3,290	15,400	-	15,400
1984	100%	89	15,690		5,120		1,690	22,500	-	22,500
1985	100%	89	7,980		32,280		940	41,200	-	41,200
1986	100%	187	22,530		68,000		2,220	83,423	9,327	92,750
1987	100%	44	14,000		18,200		540	32,740	-	32,740
1988	100%	34	5,210		29,850		-	35,060	-	35,060
1989	100%	50	6,990		14,040		-	21,030	-	21,030
1990	50%	24	10,713		3,116		-	13,829	-	13,829
1991	0%	59	1,651		6,279		-	7,930	-	7,930
1992	45%	39	2,574	1,750	4,437		-	8,761	-	8,761
1993	100%	126	51,045	-	30,319		32,727	92,195	21,896	114,091
1994	50%	41	24,671	-	15,250		193	30,005	10,109	40,114
1995	100%	199	50,200	<sup>5</sup>	76,878		23,000	104,148	45,935	150,083
1996	100%	128	58,934	-	65,281		13,283	85,232	52,266	137,498
1997	100%	122	744	-	66,015		5,432	67,670	4,521	72,191
1998	100%	239	17,642	-	45,680		4,793	40,427	27,688	68,115
1999	100%	53	70,898	-	13,872		842	85,543	69	85,612
2000	90%	65	26,304	-	22,843		4,699	46,054	7,792	53,846
2001	39%	54	4,440	4,496	18,601		-	24,973	2,564	27,537
2002	70%	43	7,537	-	43,904		-	41,258	10,183	51,441
2003	90%	70	24,303	-	24,229		-	20,152	28,380	48,532
2004	65%	48	20,018	2,640	14,466		-	35,152	1,972	37,124
2005	90%	169	89,743	689	36,502		16,557	104,053	39,438	143,491
2006	100%	156	89,601	-	38,962		12,831	107,938	33,456	141,394
2007	60%	26	25,901	336	20,411		1,567	45,592	2,623	48,215
2008	35%	72	2,179	124	34,530			10,371		10,371
2009	40%	63			38,166			9,831		9,831
2010	50%	125	8,469		56,426			34,946	715	35,661
2011	80%	201	11,703		38,585	23,453	172	37,668	56,324	93,992
<b>TOTAL</b>			<b>858,930</b>	<b>10,035</b>	<b>1,126,332</b>	<b>23,453</b>	<b>134,936</b>	<b>1,734,481</b>	<b>355,258</b>	<b>2,089,739</b>

<sup>1</sup> Recovered from wells on Kern Fan Element property (unavoidable losses in conveyance to water treatment plant).

<sup>2</sup> SWP water by exchange with Kern River interests.

<sup>3</sup> Acquired from Friant-Kern interests.

<sup>4</sup> Percentage of the 1894 to date, long-term average of the April-July snow melt runoff at First Point.

<sup>5</sup> Estimated.



# ID4 History of State Water Project (SWP) Entitlement and Actual Water Deliveries

SWP Allocation		SWP SUPPLIES						
		Table A Entitlement						Total Supply
		M&I	Ag	Table A Allocated	Long Term Purchase	Surplus *	Other **	
Year								
1970	100%	18,700	-	18,700	-	-	-	18,700
1971	100%	22,100	-	22,100	-	-	-	22,100
1972	100%	24,500	-	24,500	-	-	-	24,500
1973	100%	28,000	-	28,000	-	-	-	28,000
1974	100%	31,400	-	31,400	-	-	-	31,400
1975	100%	35,000	-	35,000	-	-	-	35,000
1976	100%	37,300	-	37,300	-	-	-	37,300
1977	90%	40,800	-	36,720	-	-		36,720
1978	100%	43,100	-	43,100	-	-	10,892	53,992
1979	100%	45,400	-	45,400	-	-	48,524	93,924
1980	100%	47,700	-	47,700	1,050	-	3,104	51,854
1981	100%	50,200	-	50,200	1,250	-	30,545	81,995
1982	100%	53,600	-	53,600	1,550	-	2,000	57,150
1983	100%	56,000	-	56,000	1,850	-	-	57,850
1984	100%	59,400	-	59,400	2,530	-	7,913	69,843
1985	100%	62,900	-	62,900	2,795	-		65,695
1986	100%	65,300	-	65,300	3,875	-	2,908	72,083
1987	100%	68,800	-	68,800	3,950	-	-	72,750
1988	100%	71,200	9,335	80,535	4,750	-	620 <sup>5</sup>	85,905
1989	100%	73,500	9,860	83,360	5,477	-	6,530 <sup>4</sup>	95,367
1990	100%	77,000	10,276	82,138	6,100	1,554	-	89,792
1991	30%	77,000	10,276	23,100	5,600	1,554	635 <sup>5</sup>	30,889
1992	45%	77,000	10,276	39,274	5,400	1,554	2,500 <sup>5</sup>	48,728
1993	100%	77,000	10,276	87,276	5,310	1,554	39,189	133,329
1994	53%	77,000	10,276	46,169	5,220	1,554	-	52,943
1995	100%	77,000	10,276	87,276	5,050	-	(2,195) <sup>6</sup>	90,131
1996	100%	77,000	10,276	87,276	11,100	-	2,011 <sup>5</sup>	100,387
1997	100%	77,000	5,946	82,946	11,000	-	-	93,946
1998	100%	77,000	5,946	82,946	10,800	-	-	93,746
1999	100%	77,000	5,946	82,946	10,600	-	-	93,546
2000	90%	77,000	5,946	74,651	14,352		47,122	136,125
2001	39%	77,000	5,946	32,349	6,219	-	14,395	52,963
2002	70%	77,000	5,946	58,062	6,455	-	3,593	68,110
2003	90%	77,000	5,946	74,651	10,503	-	15,938	101,092
2004	65%	77,000	5,946	53,915	5,435		7,904	67,254
2005	90%	77,000	5,946	74,651	11,474		72,709	158,834
2006	100%	77,000	5,946	82,946	13,219		42,564	138,729
2007	60%	77,000	5,946	49,768	4,080	-	8,280	62,128
2008	35%	77,000	5,946	29,031	-	-	136	29,167
2009	40%	77,000	5,946	33,178	-	-	1,236	34,414
2010	50%	77,000	5,946	41,473	-		12,974	54,447
2011	80%	77,000	5,946	66,357			25,057	91,414
TOTALS		2,628,900	180,317	2,322,395	176,994	7,770	407,084	2,914,243

\* Replaced by interruptible water after execution of the Monterey Agreement in December 1994

\*\* Surplus, Unscheduled Surplus, Dry Year Cutback/Payback, Carryover, Interruptible, exchanges and GRP water

\*\*\* ID4 banking in City's 2,800 acres, Pioneer North & South, and Kern Water Bank

<sup>1</sup> CVC/ID4 project not completed.

<sup>2</sup> Due to State Water Project shortfalls.

<sup>3</sup> Wet years on the Kern River.

<sup>4</sup> Includes 5,000 af released to water pool for use by agricultural districts.

<sup>5</sup> Carryover.

<sup>6</sup> Carryover 6,131 af and 5,000 af Kern-Tulare/Lost Hills/ID4 exchange.

ID4 Deliveries					SWP Supply Deficiency	Inability to Accept SWP Supply
Deliveries within ID4	Banked Water ***	Water Transfers	Total Deliveries	Carryover		
-	-		-	-	-	18,700 <sup>1</sup>
22,100	-		22,100	-	-	-
24,500	-		24,500	-	-	-
27,907	-		27,907	-	-	93 <sup>3</sup>
30,816	-		30,816	-	-	584 <sup>3</sup>
35,000	-		35,000	-	-	-
37,300	-		37,300	-	-	-
23,695	-	5,000	28,695	8,025 <sup>4</sup>	4,080 <sup>2</sup>	-
42,020	-		42,020	-	-	11,972 <sup>3</sup>
93,924	-		93,924	-	-	-
38,678	-		38,678	-	-	13,176 <sup>3</sup>
71,995	-		71,995	-	-	10,000 <sup>3</sup>
20,120	-		20,120	-	-	37,030 <sup>3</sup>
3,427	-		3,427	-	-	54,423 <sup>3</sup>
69,843	-		69,843	-	-	-
65,695	-	1,100	66,795	2,908	-	-
32,040	9,327	1,100	42,467	-	-	29,616 <sup>3</sup>
71,030	-	1,100	72,130	620 <sup>5</sup>	-	-
73,674	-	6,100 <sup>4</sup>	79,774	6,131	-	-
77,367	-	18,000	95,367	-	-	-
79,413	-		79,413	8,828 <sup>7</sup>	5,138 <sup>2</sup>	-
24,851	-		24,851	2,500 <sup>5</sup>	64,176 <sup>2</sup>	-
44,992	-		44,992	(1,083) <sup>8</sup>	48,002 <sup>2</sup>	-
109,879	21,896		131,775	-	-	-
69,917	10,109		80,026	(2,195) <sup>8</sup>	41,107 <sup>2</sup>	-
108,781	45,935		154,716	2,011 <sup>5</sup>	-	-
120,324	52,266		172,590	-	-	-
103,767	4,521		108,288	-	-	-
79,474	27,688		107,162	-	-	7,700 <sup>3</sup>
191,201	69		191,270	-	-	-
121,774	7,792		129,566	10,471 <sup>9</sup>	8,295 <sup>2</sup>	-
46,744	2,564		49,308	-	50,597 <sup>2</sup>	-
71,195	10,183		81,378	-	24,884 <sup>2</sup>	-
86,619	28,380		114,999	5,062 <sup>5</sup>	8,295 <sup>2</sup>	-
79,571	1,972		81,543		29,031 <sup>2</sup>	-
51,811	39,438		91,249	390 <sup>5</sup>	8,295 <sup>2</sup>	-
63,921	33,456		97,377	1,425 <sup>5</sup>	-	-
63,552	2,623		66,175	(477) <sup>8</sup>	33,178 <sup>2</sup>	-
29,167	-		29,167	1,190 <sup>5</sup>	53,915 <sup>2</sup>	-
21,716	-		21,716	12,698 <sup>5</sup>	49,768 <sup>2</sup>	-
43,753	715		44,468	8,182 <sup>5</sup>	41,473 <sup>2</sup>	-
58,378	31,630		90,008	1,280 <sup>5</sup>	16,589	-
<b>2,531,931</b>	<b>330,564</b>	<b>32,400</b>	<b>2,894,895</b>	<b>67,966</b>	<b>486,822</b>	<b>183,294</b>

<sup>7</sup> Includes 635 af of carryover and 8,193 af released to water pool for use by agricultural district.<sup>8</sup> Overdeliveries.<sup>9</sup> Includes 10,000 af exchanged with Arvin-Edison; 47 af carryover.

Year	Agricultural	All Other	Total Production	Charges Collected
1976	20,000	78,200	98,200	\$1,321,000
1977	11,700	61,900	73,600	\$1,102,000
1978	14,500	55,500	70,000	\$1,119,000
1979	14,100	61,600	75,700	\$1,369,000
1980	11,900	63,000	74,900	\$1,190,000
1981	12,797	68,697	81,494	\$1,458,000
1982	7,655	63,140	70,795	\$1,575,700
1983	4,869	62,591	67,460	\$1,302,530
1984	9,755	73,052	82,807	\$1,564,580
1985	7,568	74,080	81,648	\$1,522,013
1986	2,726	74,386	77,112	\$1,516,070
1987	4,595	72,330	76,925	\$1,426,287
1988	4,555	67,500	72,055	\$1,384,849
1989	4,730	69,100	73,830	\$1,541,380
1990	5,000	71,000	76,000	\$1,546,222
1991	12,000	72,000	84,000	\$1,524,830
1992	4,454	81,230	85,684	\$1,621,910
1993	3,281	79,455	82,736	\$2,365,720
1994	5,743	87,009	92,752	\$1,582,433
1995	4,834	80,673	85,507	\$2,500,738
1996	3,889	89,226	93,115	\$2,736,595
1997	2,089	88,721	90,810	\$2,696,467
1998	988	76,492	77,480	\$2,315,939
1999	2,676	92,197	94,873	\$2,871,004
2000	1,569	92,182	93,751	\$2,797,852
2001	1,098	95,677	96,775	\$2,828,000
2002	360	99,821	100,181	\$2,961,831
2003	173	96,522	96,695	\$2,310,515
2004	157	93,290	93,447	\$2,799,629
2005	108	82,614	82,722	\$2,623,381
2006	194	88,068	88,262	\$2,800,000
2007	506	88,016	88,522	\$2,983,707
2008	462	93,388	93,850	\$3,065,002
2009	627	90,446	91,073	\$3,162,445
2010	398	78,027	78,425	\$3,103,644
2011*	300	80,000	80,300	\$2,640,849
<b>Total</b>	<b>182,356</b>	<b>2,841,130</b>	<b>3,023,486</b>	<b>\$75,231,122</b>

*Estimated production values. Reported use not returned at time of publication.*



## Registered Active Wells within ID4 2002-2011

Year	Commercial	Domestic	Irrigation	Purveyor	Total Active Wells
2002	144	108	24	66	342
2003	142	105	19	61	327
2004	130	97	11	60	298
2005	127	96	11	60	294
2006	125	97	11	60	293
2007	125	97	11	60	293
2008	123	97	11	70	301
2009	119	91	9	73	292
2010	113	90	12	235	450
2011	114	89	10	224	437

## History of ID4 Groundwater Charges (\$/Acre-foot)

Year	Agricultural Use	All Other Uses	Sm Groundwater Facilities
1975-1978	\$7.50	\$15.00	\$0.00
1978-1994	\$10.00	\$20.00	\$0.00
1994-2008	\$15.00	\$30.00	\$30.00
2008-2009	\$17.00	\$35.00	\$34.00
2009-2012	\$17.50	\$35.00	\$35.00

## ID4 Land Use 1972 - 2011 (acres)

Year	M & I	Agricultural	Undeveloped	Total
1972	24,200	19,500	21,700	65,400
1974	30,700	18,400	16,300	65,400
1976	30,600	18,500	16,300	65,400
1978	33,500	18,000	13,900	65,400
1980	36,700	16,500	12,200	65,400
1982	38,600	14,700	12,100	65,400
1984	40,000	12,000	13,400	65,400
1986	42,000	10,800	12,600	65,400
1988	42,270	10,821	12,309	65,400
1990	49,364	8,558	7,478	65,400
1991	49,424	12,493	3,483	65,400
1992	49,759	11,641	4,000	65,400
1993	50,456	11,102	3,842	65,400
1994	51,418	10,214	3,768	65,400
1995	51,472	11,533	2,395	65,400
1996	52,775	9,431	3,194	65,400
1997	53,146	8,816	3,438	65,400
1998	51,503	7,951	5,946	65,400
1999	52,558	7,228	5,614	65,400
2000	53,457	6,592	5,351	65,400
2001	54,145	6,204	5,051	65,400
2002	52,907	8,787	3,706	65,400
2003	52,907	8,787	3,706	65,400
2004	52,907	8,788	3,705	65,400
2005	53,019	8,722	3,659	65,400
2006	53,019	8,715	3,666	65,400
2007	52,993	8,742	3,665	65,400
2008	52,993	8,741	3,666	65,400
2009	52,984	8,741	3,675	65,400
2010	55,708	6,029	3,663	65,400
2011	55,708	6,029	3,663	65,400

<b>Agriculture</b>	<i>acres</i>
Alfalfa	713
Cotton	14
Milo	430
Onions	27
Pasture	33
Poultry	7
Safflower	114
Wheat	1,891
<b>Subtotal</b>	<b>3,228</b>
<b>Other</b>	<i>acres</i>
Canal	41
Cemetary	154
Golf	1,300
Nursery	2
River	678
Sewer	535
<b>Subtotal</b>	<b>2,710</b>
Developing/Developed	52,998
Fallow	2,801
Undeveloped	3,663
Non-Producing Acres	59,462
<b>Total District Acres</b>	<b>65,400</b>

<b>Irrigation Styles</b>	<i>acres</i>
Flood	2,563
Drip	2
Miscellaneous	7
Row	14
Sprinkler	
linear	60
circular	583
<b>Total Irrigated Acres</b>	<b>3,228</b>



## Henry C. Garnett Water Purification Plant Operations Costs 2011

	Chemicals (\$)	Labor (\$)	Energy (\$)	Miscellaneous Expenditures <sup>1</sup> (\$)	Capital Outlays (\$)	Total (\$)	Deliveries (af)	Unit Rate (\$/af)
January	57,948	151,749	23,953	77,312	538	311,500	2,041	152.62
February	25,729	160,522	21,519	62,162	8,056	277,988	1,608	172.88
March	59,585	151,476	24,730	65,353	-	301,144	1,911	157.58
April	66,542	164,224	25,898	122,105	465	379,234	2,457	154.35
May	83,023	149,836	27,118	71,941	47,703	379,621	3,049	124.51
June	101,567	120,431	52,539	92,816	(79,269)	288,084	3,154	91.34
July	13,077	290,773	-	113,332	-	417,182	3,733	111.76
August	63,577	181,552	-	68,511	1,838	315,478	3,738	84.40
September	40,939	192,998	46,952	91,919	4,977	377,785	3,455	109.34
October	107,706	161,822	31,049	98,982	-	399,559	3,227	123.82
November	33,627	189,053	-	85,968	14,600	323,248	2,452	131.83
December	83,803	365,530	54,899	151,731	-	655,963	3,024	216.92
<b>Totals</b>	<b>737,123</b>	<b>2,279,966</b>	<b>308,657</b>	<b>1,102,132</b>	<b>(1,092)</b>	<b>4,426,786</b>	<b>33,849</b>	<b>130.78</b>

## Henry C. Garnett Water Purification Plant Historic Annual Operations Costs

	Chemicals (\$)	Labor (\$)	Energy (\$)	Miscellaneous Expenditures <sup>1</sup> (\$)	Capital Outlays (\$)	Total (\$)	Deliveries (af)	Unit Rate (\$/af)
2002	264,144	1,296,554	256,824	982,284	142,947	2,942,753	26,078	112.84
2003	307,187	1,332,116	259,658	1,471,117	221,474	3,591,552	25,125	142.95
2004	281,990	1,494,611	200,132	1,156,501	409,807	3,543,041	24,944	142.04
2005	373,640	1,651,025	256,785	1,429,100	297,483	4,008,033	26,172	153.14
2006	410,347	1,736,945	269,666	1,168,357	76,412	3,661,727	25,166	145.50
2007	496,534	1,759,677	259,859	1,288,309	74,081	3,878,460	26,998	143.66
2008	563,518	1,592,535	230,467	1,010,175	199,101	3,595,796	26,463	135.88
2009	619,402	1,643,238	454,070	955,730	27,399	3,699,839	28,335	130.57
2010	449,778	1,759,894	228,145	935,348	24,817	3,397,982	29,384	115.64
2011	737,123	2,279,966	308,657	1,102,132	(1,092)	4,426,786	33,849	130.78
<b>Totals</b>	<b>4,503,663</b>	<b>16,546,561</b>	<b>2,724,263</b>	<b>11,499,053</b>	<b>1,472,429</b>	<b>36,745,969</b>	<b>272,514</b>	

<sup>1</sup> Includes: operations (less chemicals), maintenance, office supplies, memberships, professional services, licenses & permits, insurance premiums, debt service on ID4 capital assets, KCWA overhead charges and other expenses.

	Final Actual 2008-09	Actual 2009-10	Budget 2010-11	Estimated Actual 2010-11	Proposed Budget 2011-12
<b>Revenues</b>					
4150 Treated Water Sales	4,061,456	4,280,054	5,122,500	4,695,381	6,519,450
4170 Other Water Sales	2,270,939	2,638,419	-	193,273	-
<b>Water Sales Total</b>	<b>6,332,395</b>	<b>6,918,474</b>	<b>5,122,500</b>	<b>4,888,653</b>	<b>6,519,450</b>
4290 Refunds & Credits	147,421	727,868	1,000,000	796,570	1,000,000
<b>Credits &amp; Refunds Total</b>	<b>147,421</b>	<b>727,868</b>	<b>1,000,000</b>	<b>796,570</b>	<b>1,000,000</b>
4400 Participant's Annual Payments	-	82,754	180,000	98,210	180,000
4401 Participant's O&M Costs	437,053	294,628	383,350	306,089	402,500
4402 Participant's Power Costs	1,845,756	1,360,590	1,857,450	1,542,284	2,100,000
4430 Exchange/Conveyance Fees	61,775	-	-	23,316	-
4499 Other User Charges	618,249	235,984	113,264	33,265	33,200
<b>User Charges Total</b>	<b>3,257,674</b>	<b>3,429,691</b>	<b>2,534,064</b>	<b>2,003,165</b>	<b>2,715,700</b>
4500 Groundwater Charge Collection	3,126,142	3,089,944	3,150,000	2,704,364	3,150,000
<b>Ground Water Charges Total</b>	<b>3,126,142</b>	<b>3,089,944</b>	<b>3,150,000</b>	<b>2,704,364</b>	<b>3,150,000</b>
4610 Reimbursables	1,261,053	1,041,436	260,000	320,438	592,000
<b>Reimbursements Total</b>	<b>1,261,053</b>	<b>1,041,436</b>	<b>260,000</b>	<b>320,438</b>	<b>592,000</b>
4700 Investment Income	309,776	161,068	95,000	106,020	12,000
4705 Interest From Other Sources	26,196	21,367	-	-	-
<b>Interest Income Total</b>	<b>335,972</b>	<b>182,435</b>	<b>95,000</b>	<b>106,020</b>	<b>12,000</b>
4800 Proceeds from Debt Issuance	-	-	-	-	-
<b>Proceeds From Debt Insurance Total</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
4900 Other Revenue	27,128	113,838	-	495	-
4901 Disposal of Fixed Assets	2,364	-	-	102,591	-
4902 Lease Income	-	-	-	19,200	24,000
4911 Water Analyses	21,381	21,050	20,000	17,045	20,000
<b>Other Revenue Total</b>	<b>50,873</b>	<b>134,888</b>	<b>20,000</b>	<b>139,331</b>	<b>44,000</b>
<b>Total Revenues</b>	<b>14,511,530</b>	<b>15,524,735</b>	<b>12,181,564</b>	<b>10,958,541</b>	<b>14,033,150</b>

# ID4 Operations Fund - continued

Expenditures	Final Actual 2008-09	Actual 2009-10	Budget 2010-11	Estimated Actual 2010-11	Proposed Budget 2011-12
5000 Salaries Regular	1,440,470	1,461,444	1,752,660	1,637,000	1,990,170
5001 Salaries Overtime	54,980	52,975	57,500	53,772	64,600
5002 Salaries Temporary	1,821	430	5,500	17,240	6,400
5010 Benefits Social Security	107,174	104,898	139,180	99,054	157,800
5011 Workers Compensation Insurance	(14,267)	5,472	45,030	18,705	61,260
5020 Benefits Retirement	394,926	435,252	613,460	552,613	723,720
5021 Benefits Health Insurance	328,917	337,258	390,720	367,572	481,440
5022 Benefits Life Insurance	9,441	9,206	11,520	8,931	12,360
5023 Benefits Dental Insurance	18,773	19,468	27,120	21,772	27,480
5024 Benefits Vision Insurance	4,243	4,345	6,000	4,421	6,240
5025 Benefits LTD Insurance	11,950	12,652	15,720	13,426	17,910
5026 Benefits LTC Insurance	3,319	3,102	7,320	2,840	7,200
<b>Labor Costs Total</b>	<b>2,361,746</b>	<b>2,446,502</b>	<b>3,071,730</b>	<b>2,797,346</b>	<b>3,556,580</b>
5250 Member Unit Credits	-	-	-	-	-
<b>Member Unit Credit Total</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
5100 Groundwater Recharge Fees	311,075	10,931	80,000	90,105	140,000
5101 Groundwater Extraction Fees	1,739,653	504,619	530,000	7,355	575,000
5103 Water Exchange & Convey. Fees	1,221,409	937,372	150,000	293,612	175,000
5115 Reregulation Fees	4,999	33,057	-	-	-
5130 CVC O&M Costs	502,166	393,031	625,200	598,817	650,000
5131 CVC Power & Standby Charges	334,634	149,945	560,000	648,628	588,000
5170 Other Water Purchases	-	12,600	-	160,200	-
5206 Untr'ed Wtr Purchases WY06	-	-	-	-	-
<b>Water Purchases &amp; Fees Total</b>	<b>4,113,937</b>	<b>2,041,556</b>	<b>1,945,200</b>	<b>1,798,717</b>	<b>2,128,000</b>
5260 Fuels, Oils and Grease	36,347	21,845	29,500	27,744	23,000
5270 Chemicals	619,313	512,934	765,000	656,870	975,700
5280 Water Analyses	81,829	63,857	78,500	67,906	78,500
5290 Rents and Leases	2,727	3,884	3,500	3,567	3,500
5299 Other Operating Supplies	7,353	4,824	12,250	9,693	12,200
<b>Operations Total</b>	<b>747,569</b>	<b>607,343</b>	<b>888,750</b>	<b>765,780</b>	<b>1,092,900</b>
5300 Power for Operations	2,158,162	1,716,580	2,156,150	1,825,553	2,440,000
5301 Standby Charges for Power	200	1,727	1,200	4,671	84,000
<b>Power Total</b>	<b>2,158,362</b>	<b>1,718,308</b>	<b>2,157,350</b>	<b>1,830,224</b>	<b>2,524,000</b>
5400 Maint - Structures & Improvmts	95,810	177,788	169,000	112,710	175,000
5401 Maint - Mobile Equip	22,259	7,757	17,500	12,212	17,000
5402 Maint - Electronic Equip	51,681	29,403	79,500	48,494	42,476
5403 Maint - Wells, Pumps, Motors	64,514	98,375	30,500	12,660	39,000
5408 Maint - Office Equip & Furnish	600	-	1,000	1,719	1,000
5409 Maint - Other	58,119	27,732	59,450	17,593	16,250
5410 Maint - Janitorial	26,140	23,418	30,000	17,918	25,000
<b>Maintenance Total</b>	<b>319,124</b>	<b>364,474</b>	<b>386,950</b>	<b>223,306</b>	<b>315,726</b>



# ID4 Operations Fund - continued

	Final Actual 2008-09	Actual 2009-10	Budget 2010-11	Estimated Actual 2010-11	Proposed Budget 2011-12
5500 General Office Supplies	5,589	3,841	4,600	3,899	3,500
5501 Printing and Reproduction	5,026	4,429	4,000	1,361	3,000
5502 Computer Supplies	5,975	6,046	6,500	8,315	4,500
5503 Publications & Subscriptions	6,016	3,994	6,000	4,228	3,500
5504 Mailing Services	446	1,146	3,000	2,182	3,200
5510 Laundry and Uniforms	14,447	14,371	20,000	21,042	20,000
5520 Legal Notices & Job Advertise.	5,148	3,511	2,000	780	2,000
5530 Computer Access Fees	2,456	2,012	6,500	1,172	4,650
5540 Promotions & Advertisements	19,983	16,597	14,000	5,954	21,000
5550 Assoc. & Prof. Membership Fees	24,878	37,405	40,550	28,451	54,505
5570 Telephone	6,814	10,068	9,000	10,252	9,000
5571 Utilities	6,681	9,912	11,000	5,226	7,360
5581 Liability Insurance	15,285	25,981	58,600	36,076	53,670
5582 Property Insurance	24,354	45,369	25,000	44,425	49,500
5589 Safety Programs & Equipment	20,559	13,657	18,300	22,413	18,300
5590 Directors' Fees	7,234	6,757	7,500	4,639	7,500
5591 Business Meetings & Travel	28,130	28,308	42,500	27,244	35,000
5592 Educational Expenses	22,967	851	6,000	3,247	4,500
5599 Agency Overhead Allocation	493,248	664,998	618,520	625,243	823,680
<b>Administration Total</b>	<b>715,236</b>	<b>899,253</b>	<b>903,570</b>	<b>856,149</b>	<b>1,128,365</b>
5601 Legal Services	21,128	8,236	25,000	1,389	42,500
5602 Consulting Engineers	118,596	66,924	175,500	50,666	189,000
5604 Special Consultants	59,346	59,743	137,000	46,381	105,750
<b>Professional Services Total</b>	<b>199,070</b>	<b>134,903</b>	<b>337,500</b>	<b>98,437</b>	<b>337,250</b>
5710 Land Purchase	-	2,491	800,000	793,307	-
5720 Structures & Improvements	2,330,014	511,354	765,000	272,155	1,594,000
5730 Mobile Equipment	1,820	4,999	30,000	29,040	-
5740 Electrical & Mechanical Equip	32,747	13,427	46,000	43,278	38,800
5790 Other Equipment	7,955	206	-	926	-
<b>Capital Outlays Total</b>	<b>2,372,536</b>	<b>532,476</b>	<b>1,641,000</b>	<b>1,138,706</b>	<b>1,632,800</b>
5800 Principal on Long Term Debt	-	-	315,000	-	474,400
5801 Interest on Long Term Debt	26,196	49,821	1,165,320	55,223	1,007,000
<b>Debt Repayment Total</b>	<b>26,196</b>	<b>49,821</b>	<b>1,480,320</b>	<b>55,223</b>	<b>1,481,400</b>
5910 Tax Collection Charge	-	-	-	-	-
5920 Amort. / Deprec. Expense	1,065,825	1,066,956	-	1,523,383	-
5940 Wheeling Charges Distribution	-	-	-	-	-
5950 Licenses & Permits	12,304	14,828	27,600	38,415	40,000
5960 Security	55,753	63,104	60,000	47,526	50,000
5970 Special Projects	-	729,475	1,000,000	786,676	1,000,000
5999 Other Expenses	153,852	2,996	-	5,110	-
<b>Other Expenses Total</b>	<b>1,287,735</b>	<b>1,877,359</b>	<b>1,087,600</b>	<b>2,401,110</b>	<b>1,090,000</b>
5900 Unapplied Appropriations	-	-	-	-	-
<b>Unapplied Appropriations Total</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Total Expenditures</b>	<b>14,301,510</b>	<b>10,671,994</b>	<b>13,899,970</b>	<b>11,964,998</b>	<b>15,287,021</b>

Constituent	Maximum Contaminant Level			Parameter			Months in Compliance	
Microbiological								
Coliform Bacteria	> 5.0% of samples present for coliform bacteria in one month			40 or more samples collected per month			12	
Constituent	Units	PHG	MCL	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Average
Primary Inorganic Chemicals								
Aluminum	mg/L	0.6	1	0.047	0.048	0.085	0.068	0.062
Antimony	mg/L	0.02	0.006	ND	ND	ND	ND	ND
Arsenic	mg/L	0.000004	0.010	ND	ND	ND	ND	ND
Asbestos	MFL	7	7	-	-	ND	-	N/A
Barium	mg/L	2	1	ND	ND	ND	ND	ND
Beryllium	mg/L	0.001	0.004	ND	ND	ND	ND	ND
Cadmium	mg/L	0.00004	0.005	ND	ND	ND	ND	ND
Chromium (Total)	mg/L	N/A	0.05	ND	ND	ND	ND	ND
Fluoride	mg/L	1	2	ND	0.20	0.12	0.17	0.12
Lead*	mg/L	0.0002	0.015	ND	ND	ND	ND	ND
Mercury	mg/L	0.0012	0.002	ND	ND	ND	ND	ND
Nickel	mg/L	0.012	0.1	ND	ND	ND	ND	ND
Nitrate (as NO <sub>3</sub> )	mg/L	45	45	3.11	ND	ND	ND	0.78
Nitrite (as Nitrogen, N)	mg/L	1	1	ND	ND	ND	ND	ND
Nitrite + Nitrate (sum as Nitrogen, N)	mg/L	10	10	0.703	ND	ND	ND	0.18
Selenium	mg/L	0.03	0.05	ND	ND	ND	ND	ND
Thallium	mg/L	0.0001	0.002	ND	ND	ND	ND	ND
Secondary Standards								
Aluminum	mg/L	N/A	0.2	0.047	0.048	0.085	0.068	0.062
Color	Units	N/A	15	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
Copper*	mg/L	0.3	1.0	ND	ND	ND	ND	ND
Iron	mg/L	N/A	0.3	ND	ND	ND	ND	ND
Manganese	mg/L	N/A	0.05	ND	ND	ND	ND	ND
Methyl tert-butyl ether	mg/L	N/A	0.005	ND	ND	ND	ND	ND
Odor	Units	N/A	3	2	2	1.4	1.4	2
Silver	mg/L	N/A	0.1	ND	ND	ND	ND	ND
Turbidity	NTU	N/A	5	0.06	0.07	0.07	0.08	0.07
Zinc	mg/L	N/A	5.0	0.071	0.062	ND	ND	0.033
Total Dissolved Solids	mg/L	N/A	1000	207	111	54	65	109
Specific Conductance	uS/cm	N/A	1600	347	210	89	124	193
Chloride	mg/L	N/A	500	56.9	6.94	4.63	6.21	18.7
Sulfate	mg/L	N/A	500	35.5	22.9	11.7	15.7	21.5
General Minerals								
Total Alkalinity (as CaCO <sub>3</sub> )	mg/L	N/A	N/A	50	48	26	39	41
Bicarbonate	mg/L	N/A	N/A	61.0	58.6	31.7	47.6	49.7
Carbonate	mg/L	N/A	N/A	ND	ND	ND	ND	ND
Hydroxide	mg/L	N/A	N/A	ND	ND	ND	ND	ND
Total Hardness (as CaCO <sub>3</sub> )	mg/L	N/A	N/A	77.0	44.7	21.3	29.3	43.1
Calcium	mg/L	N/A	N/A	16.5	14.0	6.99	9.27	11.7
Magnesium	mg/L	N/A	N/A	8.69	2.36	0.93	1.49	3.37
Sodium	mg/L	N/A	N/A	37.7	15.7	8.85	11.2	18.4
Potassium	mg/L	N/A	N/A	2.50	1.82	0.93	1.12	1.59
pH	Units	N/A	N/A	7.13	7.16	7.15	6.99	7.11
Additional Analyses								
Ammonia	mg/L	N/A	N/A	ND	ND	ND	ND	ND
Boron***	mg/L	N/A	1	-	0.11	-	-	N/A
Bromide	mg/L	N/A	N/A	0.06	ND	ND	ND	0.02
Chlorate***	mg/L	N/A	0.8	0.107	0.136	0.290	0.208	0.185
Chlorite	mg/L	0.05	1.0	ND	ND	ND	ND	ND
Chromium (Hexavalent)	mg/L	0.00002	N/A	-	ND	-	-	N/A
Phosphate	mg/L	N/A	N/A	ND	ND	ND	0.48	0.12
Silica	mg/L	N/A	N/A	11.6	16.1	7.06	7.38	10.5
Total Organic Carbon	mg/L	N/A	N/A	2.0	2.1	1.2	1.6	1.7

\*Values identified as MCLs are Action Levels under the lead and copper rule

\*\*Quarterly average

\*\*\*Values identified as MCLs are Notification Levels or Advisory Levels for constituents lacking MCLs

MCL = Maximum Contaminant Level

MFL = million fibers per liter: MCL for fibers exceeding 10 micrometers in length

mg/L = milligrams per liter (parts per million)

N/A = Not Applicable

ND = Not Detected

NTU = nephelometric turbidity units

pCi/L = picocuries per liter

PHG = Public Health Goal

uS/cm = micro Siemens per centimeter

Treated water quarterly monitoring compliance determined by running annual average of four quarterly samples.

## Treated Water 2011 - continued

Constituent	Units	PHG	MCL	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Average
<b>Regulated Organic Chemicals</b>								
Total Trihalomethanes**	mg/L	N/A	0.080	0.042	0.039	0.036	0.029	0.036
Bromodichloromethane**	mg/L	N/A	N/A	0.009	0.004	0.003	0.004	0.005
Bromoform**	mg/L	N/A	N/A	0.001	ND	ND	ND	ND
Chloroform**	mg/L	N/A	N/A	0.028	0.035	0.033	0.025	0.030
Dibromochloromethane**	mg/L	N/A	N/A	0.005	ND	ND	ND	0.001
Haloacetic Acids (HAA5)**	mg/L	N/A	0.060	0.048	0.038	0.035	0.030	0.038
Monochloroacetic acid**	mg/L	N/A	N/A	0.006	0.001	ND	ND	0.002
Dichloroacetic acid**	mg/L	N/A	N/A	0.015	0.015	0.015	0.015	0.015
Trichloroacetic acid**	mg/L	N/A	N/A	0.028	0.022	0.020	0.016	0.021
Monobromoacetic acid**	mg/L	N/A	N/A	ND	ND	ND	ND	ND
Dibromoacetic acid**	mg/L	N/A	N/A	ND	ND	ND	ND	ND
Benzene	mg/L	0.00015	0.001	ND	ND	ND	ND	ND
Carbon Tetrachloride	mg/L	0.0001	0.0005	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	mg/L	0.6	0.6	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	mg/L	0.006	0.005	ND	ND	ND	ND	ND
1,1-Dichloroethane	mg/L	0.003	0.005	ND	ND	ND	ND	ND
1,2-Dichloroethane	mg/L	0.0004	0.0005	ND	ND	ND	ND	ND
1,1-Dichloroethylene	mg/L	0.01	0.006	ND	ND	ND	ND	ND
cis-1,2-Dichloroethylene	mg/L	0.1	0.006	ND	ND	ND	ND	ND
trans-1,2-Dichloroethylene	mg/L	0.06	0.01	ND	ND	ND	ND	ND
Dichloromethane	mg/L	0.004	0.005	ND	ND	ND	ND	ND
1,2-Dichloropropane	mg/L	0.0005	0.005	ND	ND	ND	ND	ND
1,3-Dichloropropene	mg/L	0.0002	0.0005	ND	ND	ND	ND	ND
Ethylbenzene	mg/L	0.3	0.3	ND	ND	ND	ND	ND
Methyl tert-butyl ether	mg/L	0.013	0.013	ND	ND	ND	ND	ND
Monochlorobenzene	mg/L	0.2	0.07	ND	ND	ND	ND	ND
Styrene	mg/L	0.0005	0.1	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	mg/L	0.0001	0.001	ND	ND	ND	ND	ND
Tetrachloroethylene	mg/L	0.00006	0.005	ND	ND	ND	ND	ND
Toluene	mg/L	0.15	0.15	ND	ND	ND	ND	ND
1,2,4-Trichlorobenzene	mg/L	0.005	0.005	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	mg/L	1	0.2	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	mg/L	0.0003	0.005	ND	ND	ND	ND	ND
Trichloroethylene	mg/L	0.0017	0.005	ND	ND	ND	ND	ND
Trichlorofluoromethane	mg/L	0.7	0.15	ND	ND	ND	ND	ND
1,1,2-Trichloro-1,2,2-Trifluoroethane	mg/L	4	1.2	ND	ND	ND	ND	ND
Vinyl Chloride	mg/L	0.00005	0.0005	ND	ND	ND	ND	ND
Xylenes (total)	mg/L	1.8	1.75	ND	ND	ND	ND	ND

\*Values identified as MCLs are Action Levels under the lead and copper rule

\*\*Quarterly average

\*\*\*Values identified as MCLs are Notification Levels or Advisory Levels for constituents lacking MCLs

MCL = Maximum Contaminant Level

MFL = million fibers per liter: MCL for fibers exceeding 10 micrometers in length

mg/L = milligrams per liter (parts per million)

N/A = Not Applicable

ND = Not Detected

NTU = nephelometric turbidity units

pCi/L = picocuries per liter

PHG = Public Health Goal

uS/cm = micro Siemens per centimeter

Treated water quarterly monitoring compliance determined by running annual average of four quarterly samples.



## Treated Water 2011 - continued

Constituent	Units	PHG	MCL	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Average
<b>Unregulated Organic Chemicals</b>								
tert-Amyl methyl ether	mg/L	N/A	N/A	ND	ND	ND	ND	ND
Bromobenzene	mg/L	N/A	N/A	ND	ND	ND	ND	ND
Bromochloromethane	mg/L	N/A	N/A	ND	ND	ND	ND	ND
Bromomethane	mg/L	N/A	N/A	ND	ND	ND	ND	ND
Tertiary butyl alcohol***	mg/L	N/A	0.012	ND	ND	ND	ND	ND
n-Butylbenzene***	mg/L	N/A	0.26	ND	ND	ND	ND	ND
sec-Butylbenzene***	mg/L	N/A	0.26	ND	ND	ND	ND	ND
tert-Butylbenzene***	mg/L	N/A	0.26	ND	ND	ND	ND	ND
Chloroethane	mg/L	N/A	N/A	ND	ND	ND	ND	ND
Chloromethane	mg/L	N/A	N/A	ND	ND	ND	ND	ND
2-Chlorotoluene***	mg/L	N/A	0.14	ND	ND	ND	ND	ND
4-Chlorotoluene***	mg/L	N/A	0.14	ND	ND	ND	ND	ND
Dibromomethane	mg/L	N/A	N/A	ND	ND	ND	ND	ND
1,3-Dichlorobenzene***	mg/L	N/A	0.6	ND	ND	ND	ND	ND
Dichlorodifluoromethane***	mg/L	N/A	1	ND	ND	ND	ND	ND
1,3-Dichloropropane	mg/L	N/A	N/A	ND	ND	ND	ND	ND
2,2-Dichloropropane	mg/L	N/A	N/A	ND	ND	ND	ND	ND
1,1-Dichloropropene	mg/L	N/A	N/A	ND	ND	ND	ND	ND
Diisopropyl ether	mg/L	N/A	N/A	ND	ND	ND	ND	ND
Ethyl tert-butyl ether	mg/L	N/A	N/A	ND	ND	ND	ND	ND
Hexachlorobutadiene	mg/L	N/A	N/A	ND	ND	ND	ND	ND
Isopropylbenzene***	mg/L	N/A	0.77	ND	ND	ND	ND	ND
p-Isopropyltoluene	mg/L	N/A	N/A	ND	ND	ND	ND	ND
Naphthalene***	mg/L	N/A	0.017	ND	ND	ND	ND	ND
Nitrobenzene	mg/L	N/A	N/A	ND	ND	ND	ND	ND
Pentachloroethane	mg/L	N/A	N/A	ND	ND	ND	ND	ND
n-Propylbenzene***	mg/L	N/A	0.26	ND	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	mg/L	N/A	N/A	ND	ND	ND	ND	ND
1,2,3-Trichlorobenzene	mg/L	N/A	N/A	ND	ND	ND	ND	ND
1,3,5-Trichlorobenzene	mg/L	N/A	N/A	ND	ND	ND	ND	ND
1,2,3-Trichloropropane***	mg/L	0.0000007	0.000005	ND	ND	ND	ND	ND
1,2,3-Trimethylbenzene	mg/L	N/A	N/A	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene***	mg/L	N/A	0.33	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene***	mg/L	N/A	0.33	ND	ND	ND	ND	ND
Methyl isobutyl ketone***	mg/L	N/A	0.12	ND	ND	ND	ND	ND

\*Values identified as MCLs are Action Levels under the lead and copper rule

\*\*Quarterly average

\*\*\*Values identified as MCLs are Notification Levels or Advisory Levels for constituents lacking MCLs

MCL = Maximum Contaminant Level

MFL = million fibers per liter: MCL for fibers exceeding 10 micrometers in length

mg/L = milligrams per liter (parts per million)

N/A = Not Applicable

ND = Not Detected

NTU = nephelometric turbidity units

pCi/L = picocuries per liter

PHG = Public Health Goal

uS/cm = micro Siemens per centimeter

Treated water quarterly monitoring compliance determined by running annual average of four quarterly samples.

Constituent	Units	PHG*	MCL*	Source			
				Friant Kern	Groundwater	Aqueduct	Kern River
Primary Inorganic Chemicals							
Aluminum	mg/L	0.6	1	0.168	0.305	0.648	0.511
Antimony	mg/L	0.02	0.006	ND	ND	ND	ND
Arsenic	mg/L	0.000004	0.010	ND	ND	ND	0.004
Asbestos	MFL	7	7	ND	ND	ND	ND
Barium	mg/L	2	1	ND	ND	ND	ND
Beryllium	mg/L	0.001	0.004	ND	ND	ND	ND
Cadmium	mg/L	0.00004	0.005	ND	ND	ND	ND
Chromium	mg/L	N/A	0.05	ND	ND	0.002	0.001
Cyanide	mg/L	0.15	0.15	ND	ND	ND	ND
Fluoride	mg/L	1	2	ND	ND	ND	0.21
Lead**	mg/L	0.0002	0.015	ND	ND	ND	ND
Mercury	mg/L	0.0012	0.002	ND	ND	ND	ND
Nickel	mg/L	0.012	0.1	ND	ND	ND	ND
Nitrate (as NO <sub>3</sub> )	mg/L	45	45	ND	ND	1.90	ND
Nitrite (as Nitrogen, N)	mg/L	1	1	ND	ND	ND	ND
Nitrate + Nitrite (sum as Nitrogen, N)	mg/L	10	10	ND	ND	0.43	ND
Perchlorate	mg/L	0.006	0.006	ND	ND	ND	ND
Selenium	mg/L	0.03	0.05	ND	ND	ND	ND
Thallium	mg/L	0.0001	0.002	ND	ND	ND	ND
Secondary Standards							
Aluminum	mg/L	N/A	0.2	0.168	0.305	0.648	0.511
Color	Units	N/A	15	25	25	50	30
Copper**	mg/L	0.3	1.0	ND	ND	ND	ND
Foaming Agents (MBAS)	mg/L	N/A	0.5	ND	ND	ND	ND
Iron	mg/L	N/A	0.3	0.178	0.185	0.879	0.740
Manganese	mg/L	N/A	0.05	ND	ND	ND	0.038
Methyl tert-butyl ether	mg/L	N/A	0.005	ND	ND	ND	ND
Odor	Units	N/A	3	6	8	6	4
Silver	mg/L	N/A	0.1	ND	ND	ND	ND
Thiobencarb	mg/L	N/A	0.001	ND	ND	ND	ND
Turbidity	Units	N/A	5	3.23	3.28	11.6	8.54
Zinc	mg/L	N/A	5.0	ND	ND	ND	ND
Total Dissolved Solids	mg/L	N/A	1000	47	49	152	96
Specific Conductance	uS/cm	N/A	1600	68	56	253	155
Chloride	mg/L	N/A	500	2.00	2.16	25.0	3.24
Sulfate	mg/L	N/A	500	1.28	1.31	25.3	7.77
General Minerals							
Total Alkalinity (as CaCO <sub>3</sub> )	mg/L	N/A	N/A	23	23	52	56
Bicarbonate	mg/L	N/A	N/A	28.1	28.1	63.4	68.3
Carbonate	mg/L	N/A	N/A	ND	ND	ND	ND
Hydroxide	mg/L	N/A	N/A	ND	ND	ND	ND
Total Hardness (as CaCO <sub>3</sub> )	mg/L	N/A	N/A	17.3	17.2	60.5	41.6
Calcium	mg/L	N/A	N/A	5.16	5.21	12.7	12.6
Magnesium	mg/L	N/A	N/A	1.07	1.02	7.00	2.46
Sodium	mg/L	N/A	N/A	4.39	4.17	22.5	11.3
Potassium	mg/L	N/A	N/A	1.22	1.16	2.54	1.97
pH	Units	N/A	N/A	7.63	7.50	7.84	7.84
Additional Analyses							
Ammonia	mg/L	N/A	N/A	ND	0.05	0.03	ND
Boron***	mg/L	N/A	1	ND	ND	0.13	ND
Bromide	mg/L	N/A	N/A	ND	ND	0.06	ND
Chromium (Hexavalent)	mg/L	0.00002	N/A	ND	ND	ND	ND
Phosphate	mg/L	N/A	N/A	ND	ND	ND	ND
Silica	mg/L	N/A	N/A	14.7	14.3	12.3	17.4
Total Organic Carbon	mg/L	N/A	N/A	2.8	2.8	4.1	3.4
Radioactivity							
Gross Alpha	pCi/L	N/A	15	ND	ND	3.98	ND
Gross Beta	mrem/yr	N/A	4	-	-	-	-
Radium 226 + Radium 228	pCi/L	N/A	5	-	-	-	-
Radium 226	pCi/L	0.05	N/A	ND	1.01	ND	ND
Radium 228	pCi/L	0.019	N/A	ND	ND	1.03	ND
Strontium-90	pCi/L	0.35	8	-	-	-	-
Tritium	pCi/L	400	20,000	-	-	-	-
Uranium	pCi/L	0.43	20	ND	1.0	1.4	1.5

\*Applicable to treated water only

\*\*Values identified as MCLs are Action Levels under the lead and copper rule

\*\*\*Values identified as MCLs are Notification Levels or Advisory Levels for constituents lacking MCLs

MCL = Maximum Contaminant Level

MFL = million fibers per liter: MCL for fibers exceeding 10 micrometers in length

mg/L = milligrams per liter (parts per million)

mrem/yr = millirems per year

N/A = Not Applicable

ND = Not Detected

NTU = nephelometric turbidity units

pCi/L = picocuries per liter

PHG = Public Health Goal

uS/cm = micro Siemens per centimeter

# Source Water 2011 - continued

Constituent	Units	PHG*	MCL*	Sample Date			
				Friant Kern	Groundwater	Aqueduct	Kern River
Regulated Volatile Organic Chemicals							
Benzene	mg/L	0.00015	0.001	ND	ND	ND	ND
Carbon Tetrachloride	mg/L	0.0001	0.0005	ND	ND	ND	ND
1,2-Dichlorobenzene	mg/L	0.6	0.6	ND	ND	ND	ND
1,4-Dichlorobenzene	mg/L	0.006	0.005	ND	ND	ND	ND
1,1-Dichloroethane	mg/L	0.003	0.005	ND	ND	ND	ND
1,2-Dichloroethane	mg/L	0.0004	0.0005	ND	ND	ND	ND
1,1-Dichloroethylene	mg/L	0.01	0.006	ND	ND	ND	ND
cis-1,2-Dichloroethylene	mg/L	0.1	0.006	ND	ND	ND	ND
trans-1,2-Dichloroethylene	mg/L	0.06	0.01	ND	ND	ND	ND
Dichloromethane	mg/L	0.004	0.005	ND	ND	ND	ND
1,2-Dichloropropane	mg/L	0.0005	0.005	ND	ND	ND	ND
1,3-Dichloropropene	mg/L	0.0002	0.0005	ND	ND	ND	ND
Ethylbenzene	mg/L	0.3	0.3	ND	ND	ND	ND
Methyl tert-butyl ether	mg/L	0.013	0.013	ND	ND	ND	ND
Monochlorobenzene	mg/L	0.2	0.07	ND	ND	ND	ND
Styrene	mg/L	0.0005	0.1	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	mg/L	0.0001	0.001	ND	ND	ND	ND
Tetrachloroethylene	mg/L	0.00006	0.005	ND	ND	ND	ND
Toluene	mg/L	0.15	0.15	ND	0.001	ND	ND
1,2,4-Trichlorobenzene	mg/L	0.005	0.005	ND	ND	ND	ND
1,1,1-Trichloroethane	mg/L	1	0.2	ND	ND	ND	ND
1,1,2-Trichloroethane	mg/L	0.0003	0.005	ND	ND	ND	ND
Trichloroethylene	mg/L	0.0017	0.005	ND	ND	ND	ND
Trichlorofluoromethane	mg/L	0.7	0.15	ND	ND	ND	ND
1,1,2-Trichloro-1,2,2-Trifluoroethane	mg/L	4	1.2	ND	ND	ND	ND
Vinyl Chloride	mg/L	0.00005	0.0005	ND	ND	ND	ND
Xylenes (total)	mg/L	1.8	1.75	ND	ND	ND	ND
Regulated Non-Volatile Synthetic Organic Chemicals							
Alachlor	mg/L	0.004	0.002	ND	ND	ND	ND
Atrazine	mg/L	0.00015	0.001	ND	ND	ND	ND
Bentazon	mg/L	0.2	0.018	ND	ND	ND	ND
Benzo(a)pyrene	mg/L	0.000007	0.0002	ND	ND	ND	ND
Carbofuran	mg/L	0.0017	0.018	ND	ND	ND	ND
Chlordane	mg/L	0.00003	0.0001	ND	ND	ND	ND
Dalapon	mg/L	0.79	0.2	ND	ND	ND	ND
1,2-Dibromo-3-chloropropane	mg/L	0.0000017	0.0002	ND	ND	ND	ND
2,4-Dichlorophenoxyacetic acid (2,4-D)	mg/L	0.02	0.07	ND	ND	ND	ND
Di(2-ethylhexyl)adipate	mg/L	0.2	0.4	ND	ND	ND	ND
Di(2-ethylhexyl)phthalate	mg/L	0.012	0.004	ND	ND	ND	ND
Dinoseb	mg/L	0.014	0.007	ND	ND	ND	ND
Diquat	mg/L	0.015	0.02	ND	ND	ND	ND
Endrin	mg/L	0.0018	0.002	ND	ND	ND	ND
Endothall	mg/L	0.58	0.1	ND	ND	ND	ND
Ethylene Dibromide	mg/L	0.00001	0.00005	ND	ND	ND	ND
Glyphosate	mg/L	0.9	0.7	ND	ND	ND	ND
Heptachlor	mg/L	0.000008	0.00001	ND	ND	ND	ND
Heptachlor Epoxide	mg/L	0.000006	0.00001	ND	ND	ND	ND
Hexachlorobenzene	mg/L	0.00003	0.001	ND	ND	ND	ND
Hexachlorocyclopentadiene	mg/L	0.05	0.05	ND	ND	ND	ND
Lindane	mg/L	0.000032	0.0002	ND	ND	ND	ND
Methoxychlor	mg/L	0.00009	0.03	ND	ND	ND	ND
Molinate	mg/L	0.001	0.02	ND	ND	ND	ND
Oxamyl	mg/L	0.026	0.05	ND	ND	ND	ND
Pentachlorophenol	mg/L	0.0003	0.001	ND	ND	ND	ND
Picloram	mg/L	0.5	0.5	ND	ND	ND	ND
Polychlorinated Biphenyls	mg/L	0.00009	0.0005	ND	ND	ND	ND
Simazine	mg/L	0.004	0.004	ND	ND	ND	ND
2,4,5-TP (Silvex)	mg/L	0.025	0.05	ND	ND	ND	ND
2,3,7,8-TCDD (Dioxin)	mg/L	0.00000000005	0.00000003	waived	waived	waived	waived
Thiobencarb	mg/L	0.07	0.07	ND	ND	ND	ND
Toxaphene	mg/L	0.00003	0.003	ND	ND	ND	ND

\*Applicable to treated water only

\*\*Values identified as MCLs are Action Levels under the lead and copper rule

\*\*\*Values identified as MCLs are Notification Levels or Advisory Levels for constituents lacking MCLs

MCL = Maximum Contaminant Level

MFL = million fibers per liter: MCL for fibers exceeding 10 micrometers in length

mg/L = milligrams per liter (parts per million)

mrem/yr = millirems per year

N/A = Not Applicable

ND = Not Detected

NTU = nephelometric turbidity units

pCi/L = picocuries per liter

PHG = Public Health Goal

uS/cm = micro Siemens per centimeter



# Source Water 2011 - continued

Constituent	Units	PHG*	MCL*	Sample Date			
				Friant Kern	Groundwater	Aqueduct	Kern River
Unregulated Volatile Organic Chemicals							
tert-Amyl methyl ether	mg/L	N/A	N/A	ND	ND	ND	ND
Bromobenzene	mg/L	N/A	N/A	ND	ND	ND	ND
Bromochloromethane	mg/L	N/A	N/A	ND	ND	ND	ND
Bromomethane	mg/L	N/A	N/A	ND	ND	ND	ND
Tertiary butyl alcohol***	mg/L	N/A	0.012	ND	ND	ND	ND
n-Butylbenzene***	mg/L	N/A	0.26	ND	ND	ND	ND
sec-Butylbenzene***	mg/L	N/A	0.26	ND	ND	ND	ND
tert-Butylbenzene***	mg/L	N/A	0.26	ND	ND	ND	ND
Chloroethane	mg/L	N/A	N/A	ND	ND	ND	ND
Chloromethane	mg/L	N/A	N/A	ND	ND	ND	ND
2-Chlorotoluene***	mg/L	N/A	0.14	ND	ND	ND	ND
4-Chlorotoluene***	mg/L	N/A	0.14	ND	ND	ND	ND
Dibromomethane	mg/L	N/A	N/A	ND	ND	ND	ND
1,3-Dichlorobenzene***	mg/L	N/A	0.6	ND	ND	ND	ND
Dichlorodifluoromethane***	mg/L	N/A	1	ND	ND	ND	ND
1,3-Dichloropropane	mg/L	N/A	N/A	ND	ND	ND	ND
2,2-Dichloropropane	mg/L	N/A	N/A	ND	ND	ND	ND
1,1-Dichloropropene	mg/L	N/A	N/A	ND	ND	ND	ND
Diisopropyl ether	mg/L	N/A	N/A	ND	ND	ND	ND
Ethyl tert-butyl ether	mg/L	N/A	N/A	ND	ND	ND	ND
Hexachlorobutadiene	mg/L	N/A	N/A	ND	ND	ND	ND
Isopropylbenzene***	mg/L	N/A	0.77	ND	ND	ND	ND
p-Isopropyltoluene	mg/L	N/A	N/A	ND	ND	ND	ND
Naphthalene***	mg/L	N/A	0.017	ND	ND	ND	ND
Nitrobenzene	mg/L	N/A	N/A	ND	ND	ND	ND
Pentachloroethane	mg/L	N/A	N/A	ND	ND	ND	ND
n-Propylbenzene***	mg/L	N/A	0.26	ND	ND	ND	ND
1,1,1,2-Tetrachloroethane	mg/L	N/A	N/A	ND	ND	ND	ND
1,2,3-Trichlorobenzene	mg/L	N/A	N/A	ND	ND	ND	ND
1,3,5-Trichlorobenzene	mg/L	N/A	N/A	ND	ND	ND	ND
1,2,3-Trichloropropane***	mg/L	0.0000007	0.000005	ND	ND	ND	ND
1,2,3-Trimethylbenzene	mg/L	N/A	N/A	ND	ND	ND	ND
1,2,4-Trimethylbenzene***	mg/L	N/A	0.33	ND	ND	ND	ND
1,3,5-Trimethylbenzene***	mg/L	N/A	0.33	ND	ND	ND	ND
Methyl isobutyl ketone***	mg/L	N/A	0.12	ND	ND	ND	ND
Unregulated Non-Volatile Synthetic Organic Chemicals							
Aldicarb***	mg/L	N/A	0.007	ND	ND	ND	ND
Aldicarb Sulfone	mg/L	N/A	N/A	ND	ND	ND	ND
Aldicarb Sulfoxide	mg/L	N/A	N/A	ND	ND	ND	ND
Aldrin***	mg/L	N/A	0.000002	ND	ND	ND	ND
Bromacil	mg/L	N/A	N/A	ND	ND	ND	ND
Butachlor	mg/L	N/A	N/A	ND	ND	ND	ND
Carbaryl***	mg/L	N/A	0.7	ND	ND	ND	ND
Chlorothalonil	mg/L	N/A	N/A	ND	ND	ND	ND
Diazinon***	mg/L	N/A	0.0012	ND	ND	ND	ND
Dicamba	mg/L	N/A	N/A	ND	ND	ND	ND
Dieldrin***	mg/L	N/A	0.000002	ND	ND	ND	ND
Dimethoate***	mg/L	N/A	0.001	ND	ND	ND	ND
Diuron	mg/L	N/A	N/A	ND	ND	ND	ND
3-Hydroxycarbofuran	mg/L	N/A	N/A	ND	ND	ND	ND
Methomyl	mg/L	N/A	N/A	ND	ND	ND	ND
Metolachlor	mg/L	N/A	N/A	ND	ND	ND	ND
Metribuzin	mg/L	N/A	N/A	ND	ND	ND	ND
Propachlor***	mg/L	N/A	0.09	ND	ND	ND	ND
Trifluralin	mg/L	N/A	N/A	ND	ND	ND	ND
2,4,5-T	mg/L	N/A	N/A	ND	ND	ND	ND

\*Applicable to treated water only

\*\*Values identified as MCLs are Action Levels under the lead and copper rule

\*\*\*Values identified as MCLs are Notification Levels or Advisory Levels for constituents lacking MCLs

MCL = Maximum Contaminant Level

MFL = million fibers per liter: MCL for fibers exceeding 10 micrometers in length

mg/L = milligrams per liter (parts per million)

mrem/yr = millirems per year

N/A = Not Applicable

ND = Not Detected

NTU = nephelometric turbidity units

pCi/L = picocuries per liter

PHG = Public Health Goal

uS/cm = micro Siemens per centimeter

Figure 1

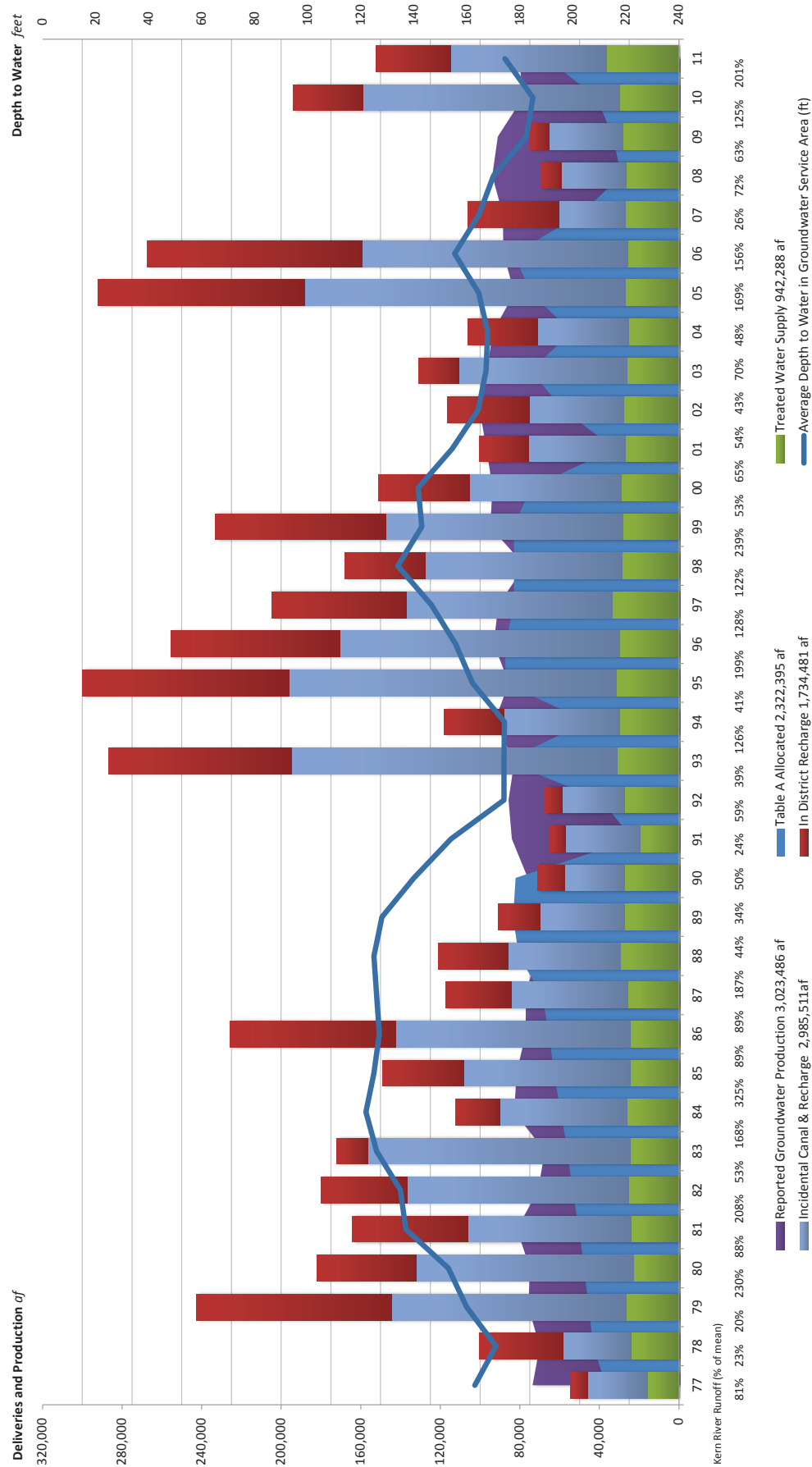


Figure 2

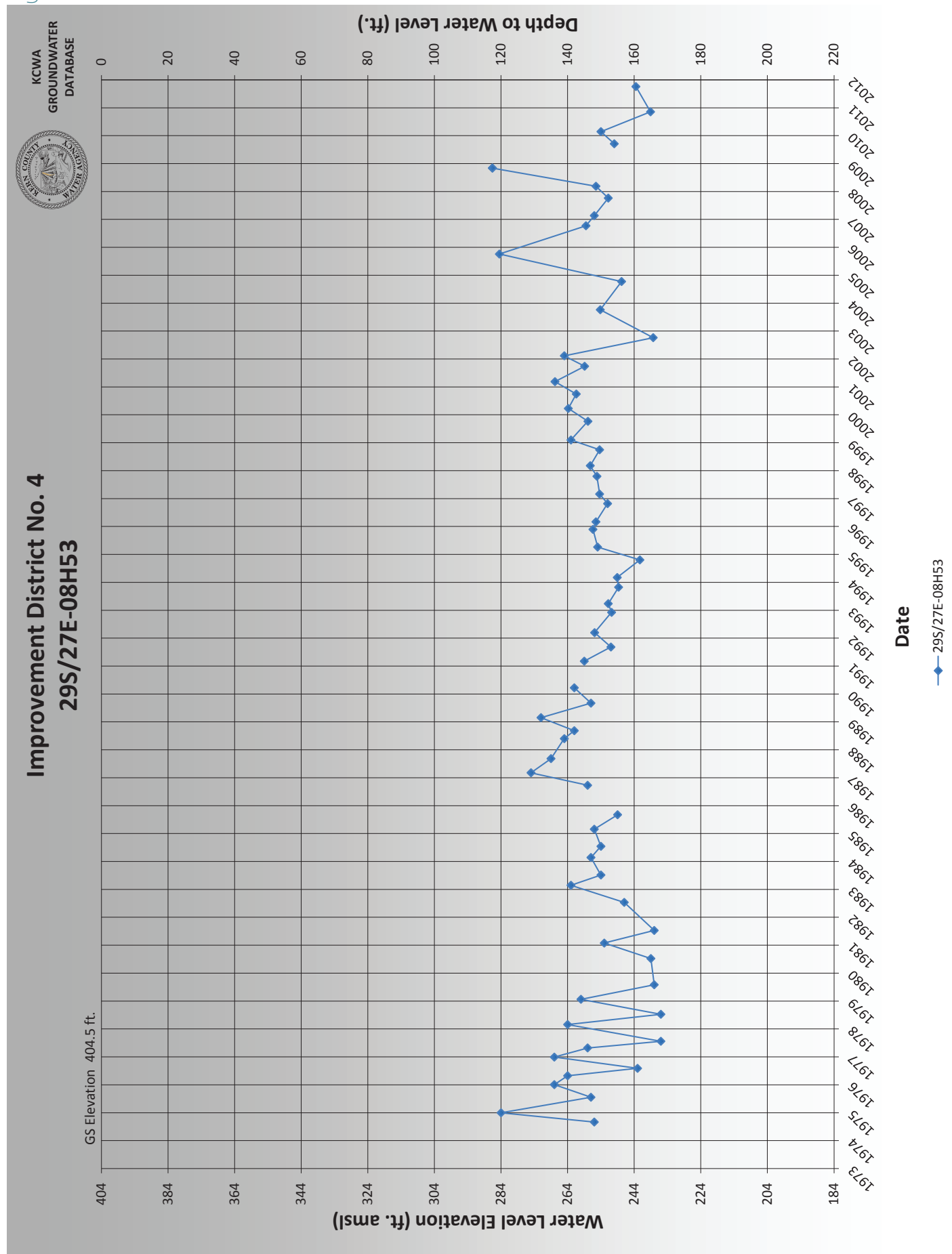




Figure 3

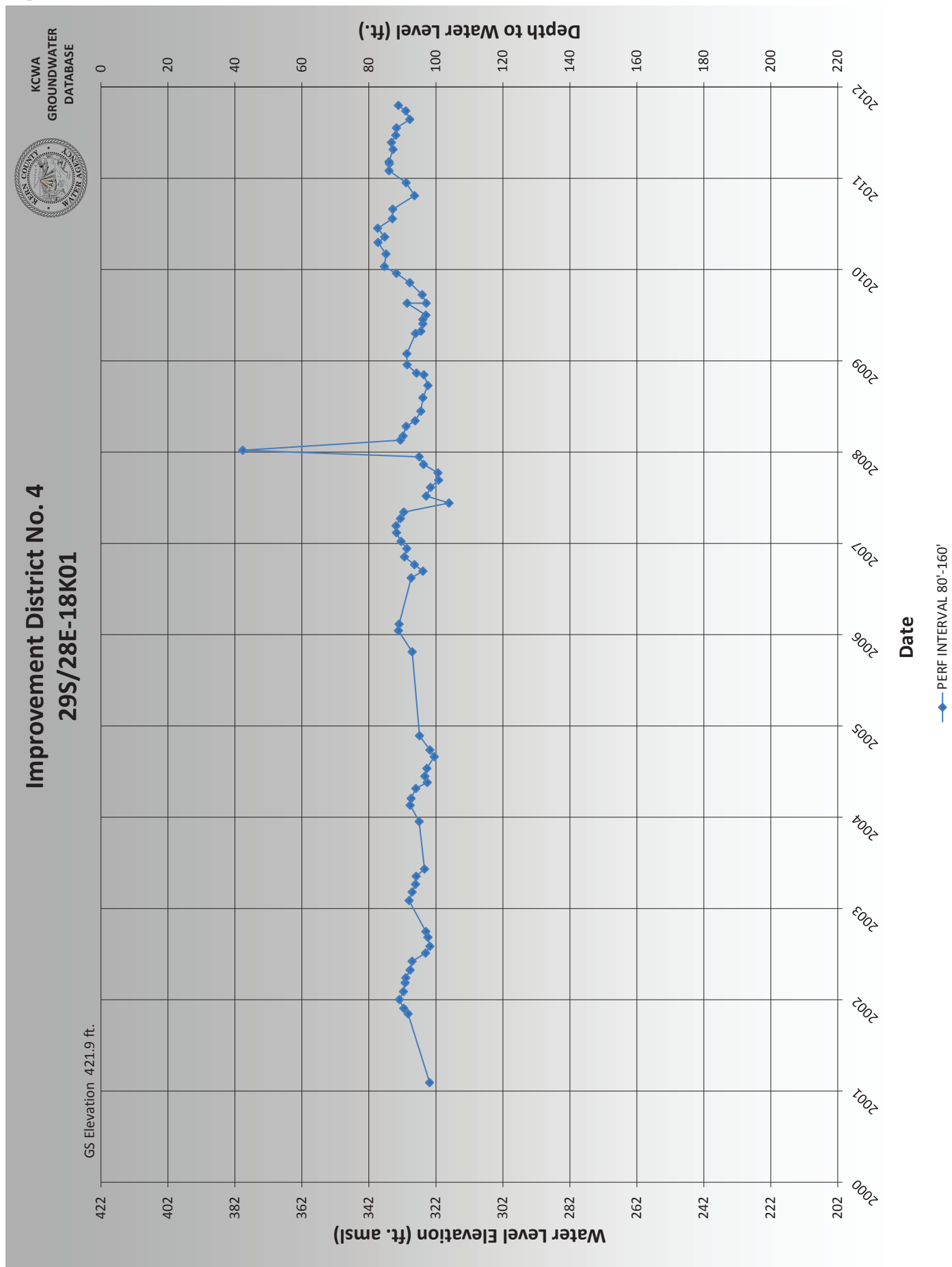


Figure 4

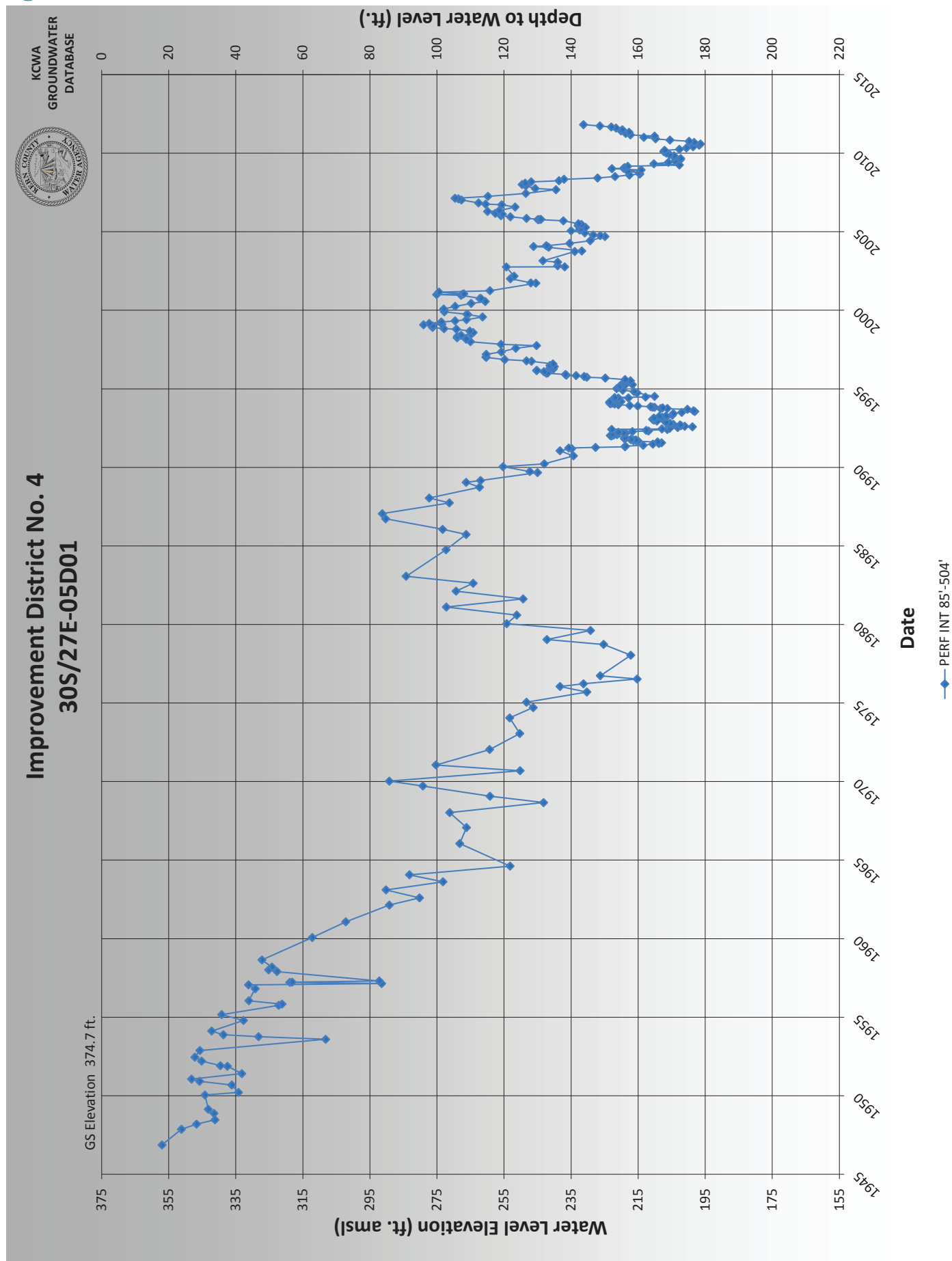
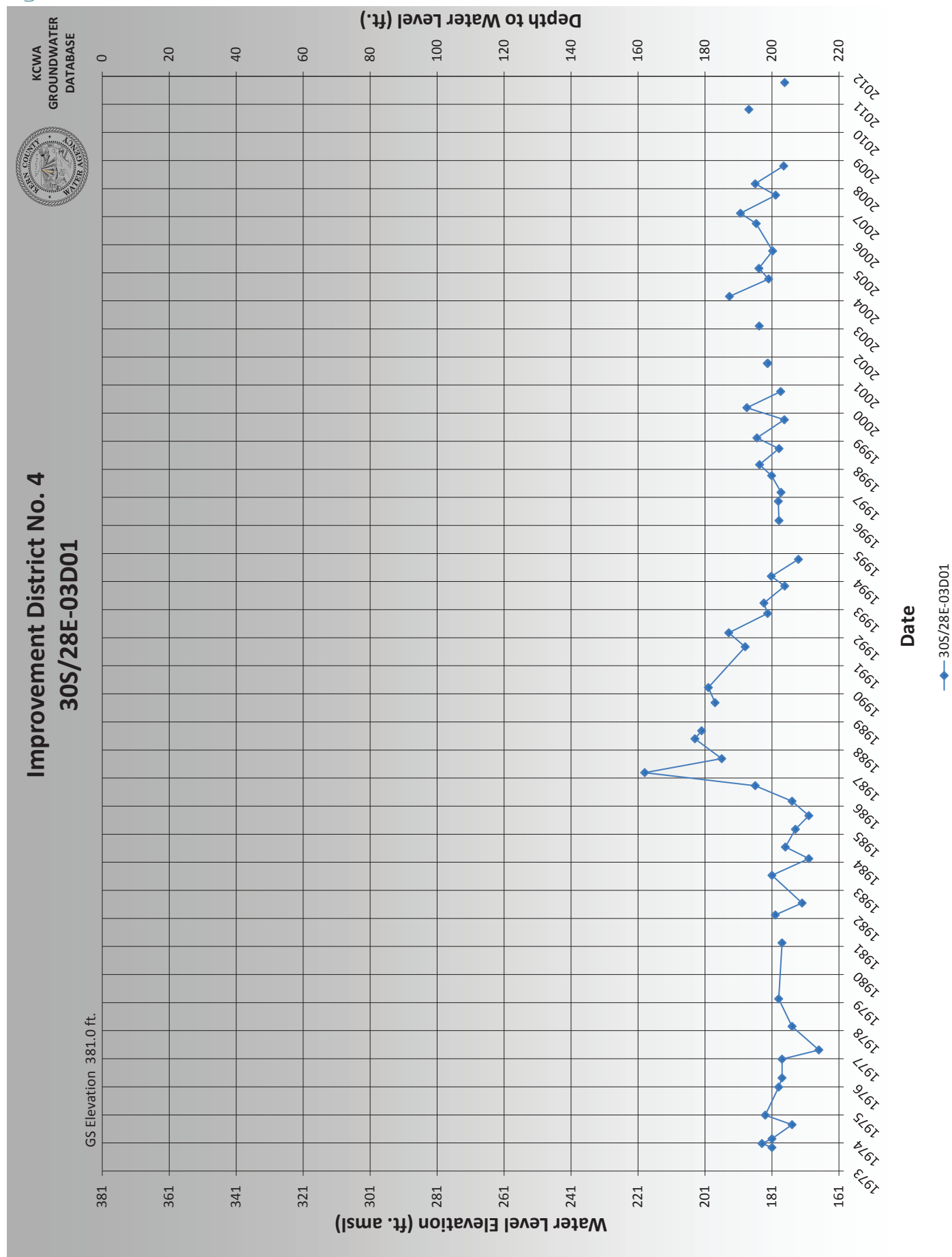


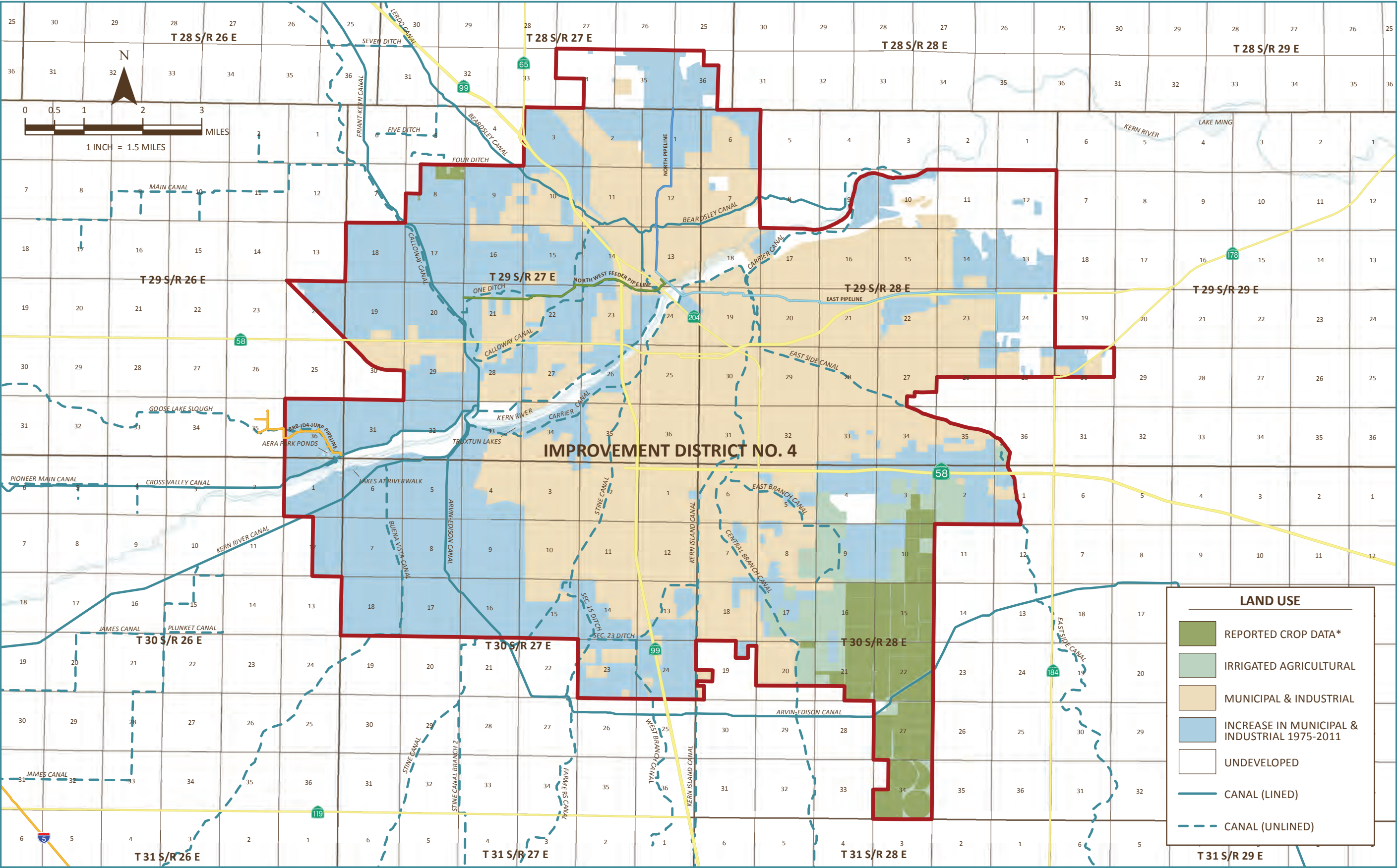
Figure 5



# Plates



Plate 1 - Land Use

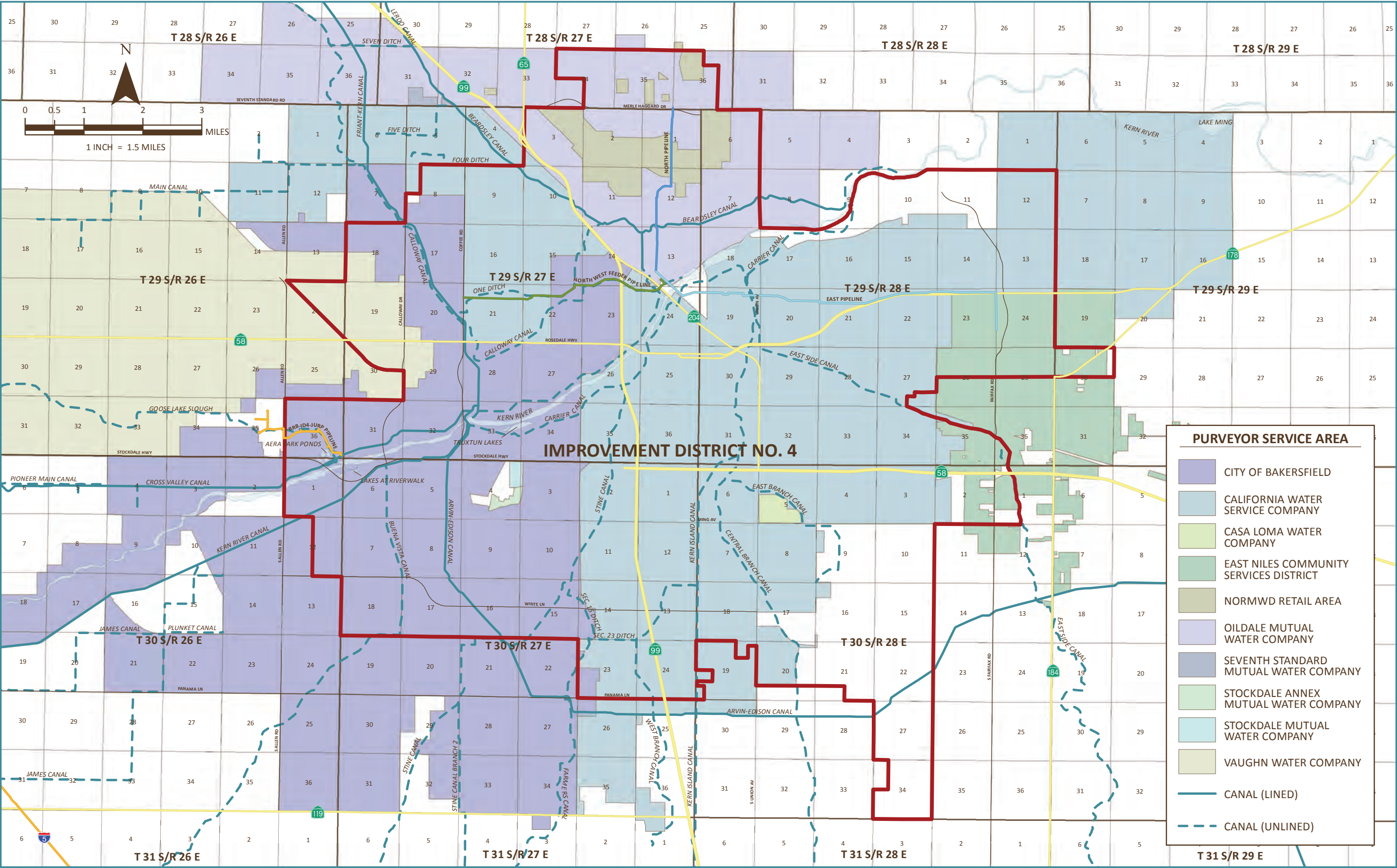


BY: S. CHAMBLESS  
DATE: DECEMBER 5, 2011  
REVIEWED BY: M. VARGA  
FILENAME: Plate 1 - Land Use (2011).mxd

\*Crop data obtained from the Department of Agriculture and Measurement Standards. Last Updated May 16, 2011.



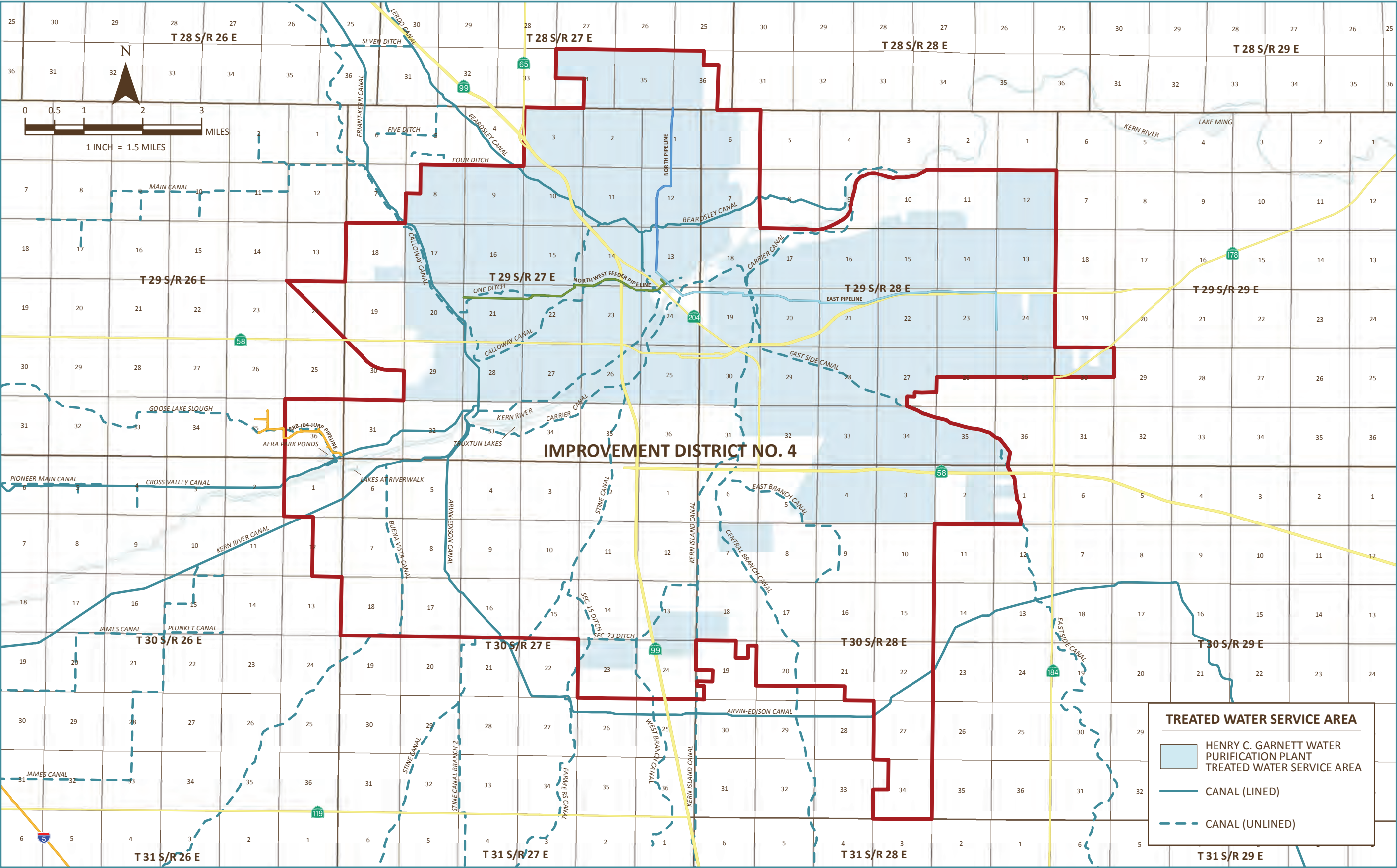
Plate 2 - Purveyor Service Area Map



BY: S. CHAMBLESS  
DATE: NOVEMBER 29, 2011  
REVIEWED BY: M. Varga  
FILENAME: Plate 2 - Purveyor Service Area (2011).mxd



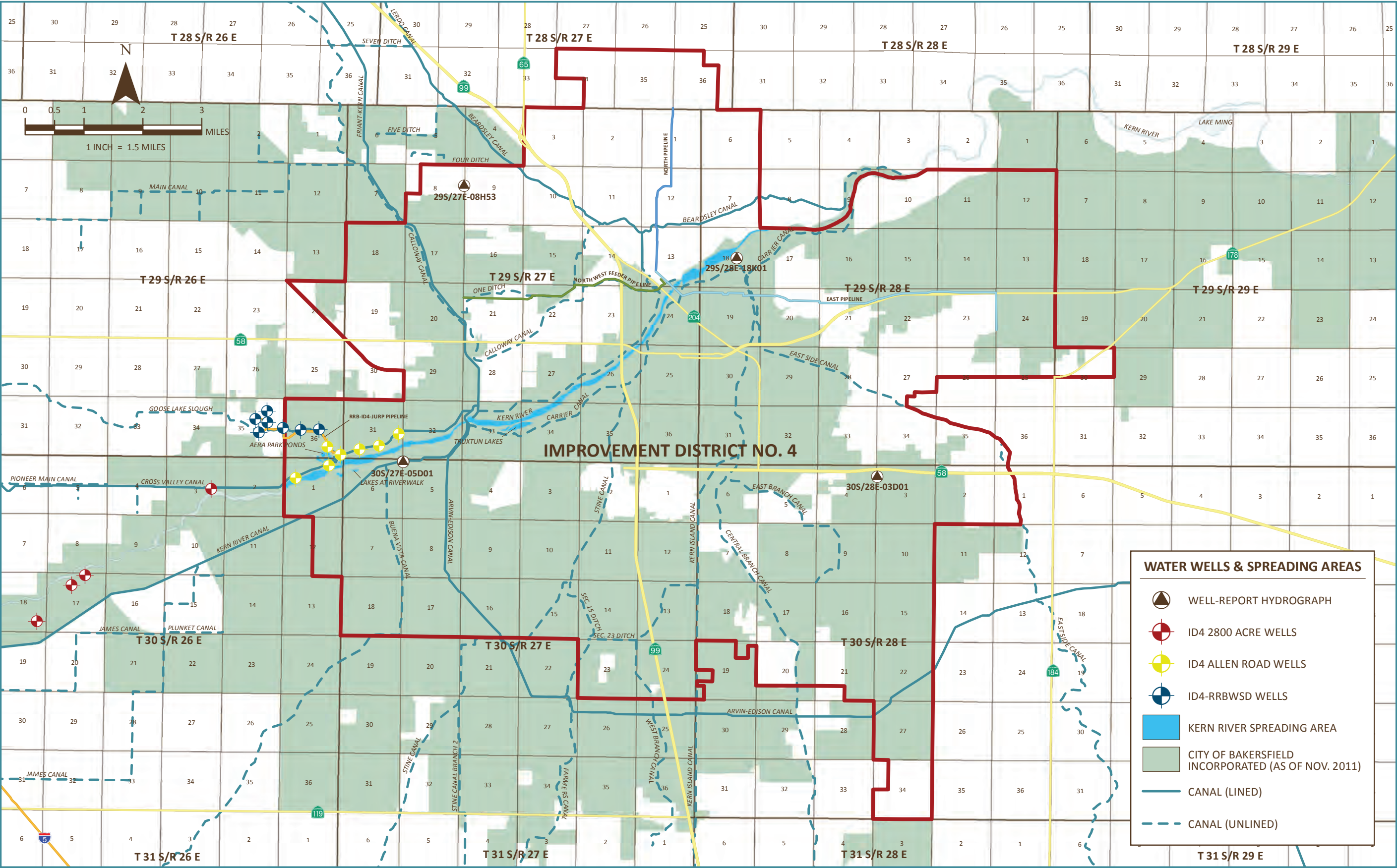
Plate 3 - Treated Water Service Area



BY: S. CHAMBLESS  
DATE: NOVEMBER 29, 2011  
REVIEWED BY: M. VARGA  
FILENAME: Plate 3 - Treated Water Service Area (2011).mxd



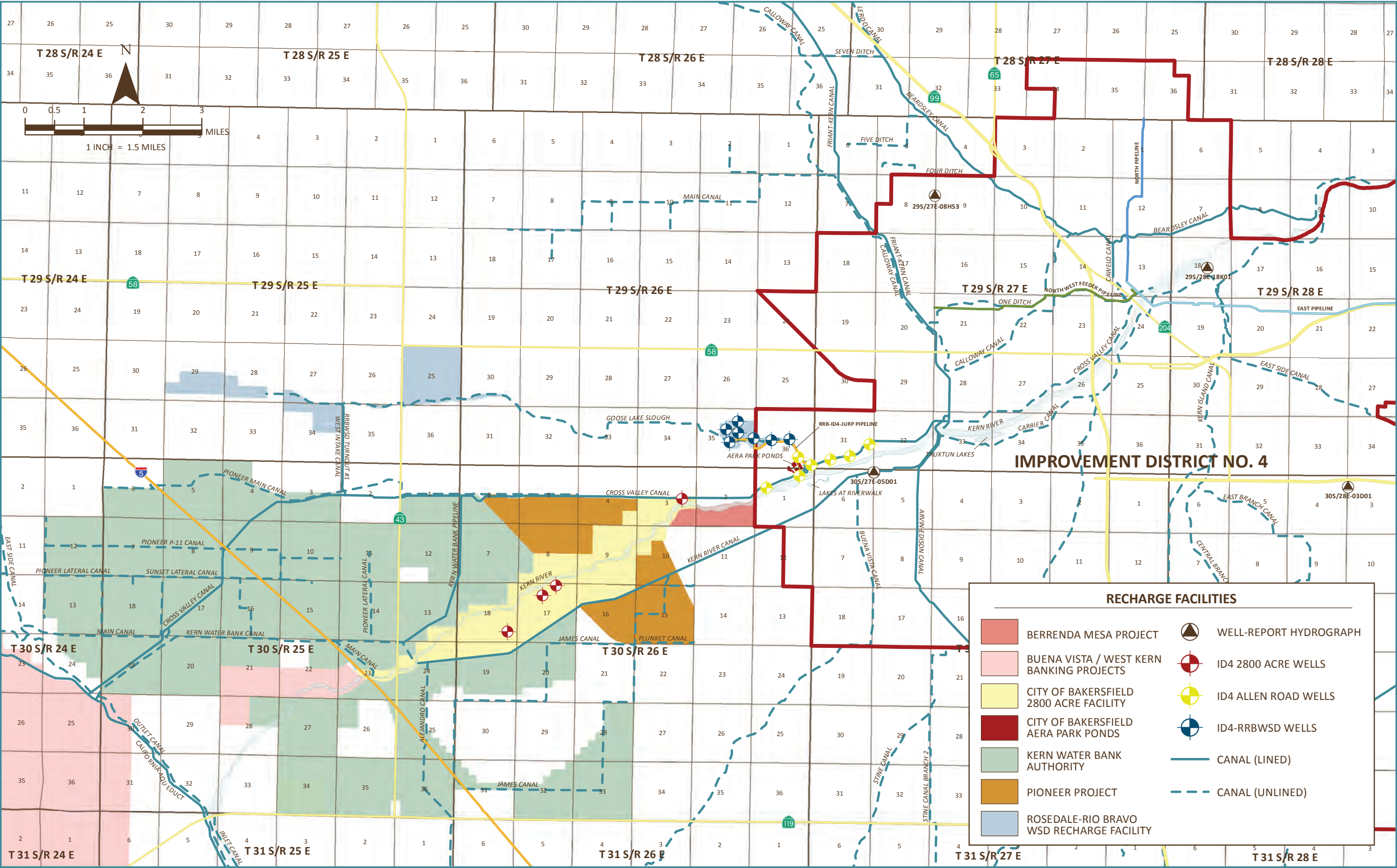
Plate 4 - Water Wells and Spreading Areas



BY: S. CHAMBLESS  
DATE: NOVEMBER 29, 2011  
REVIEWED BY: M. VARGA  
FILENAME: Plate 4 - Water Wells and Spreading Areas (2011).mxd



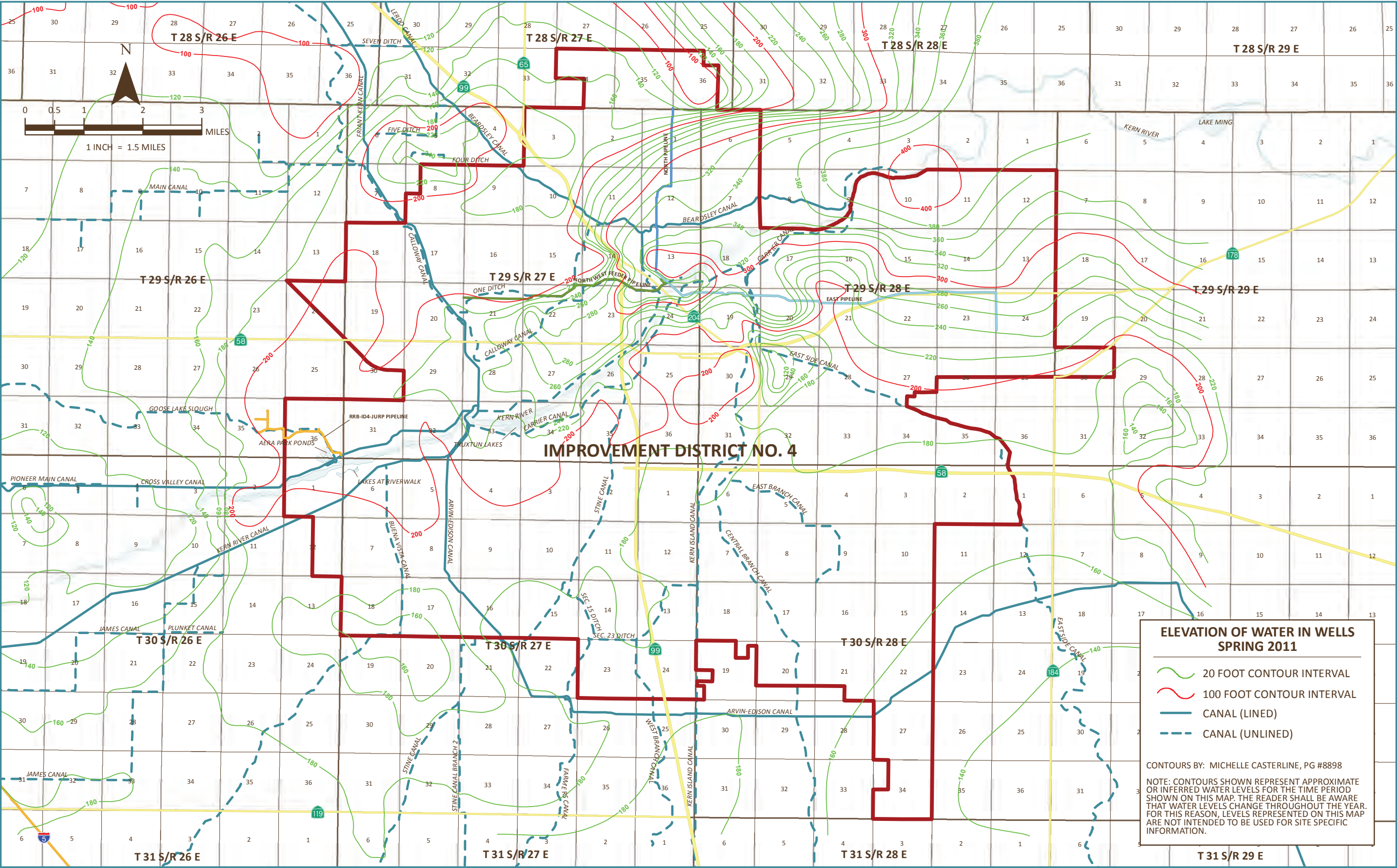
Plate 5 - Recharge Facilities Available to ID4



BY: S. CHAMBLESS  
DATE: NOVEMBER 29, 2011  
REVIEWED BY: M. VARGA  
FILENAME: Plate 5 - Recharge Facilities (2011).mxd



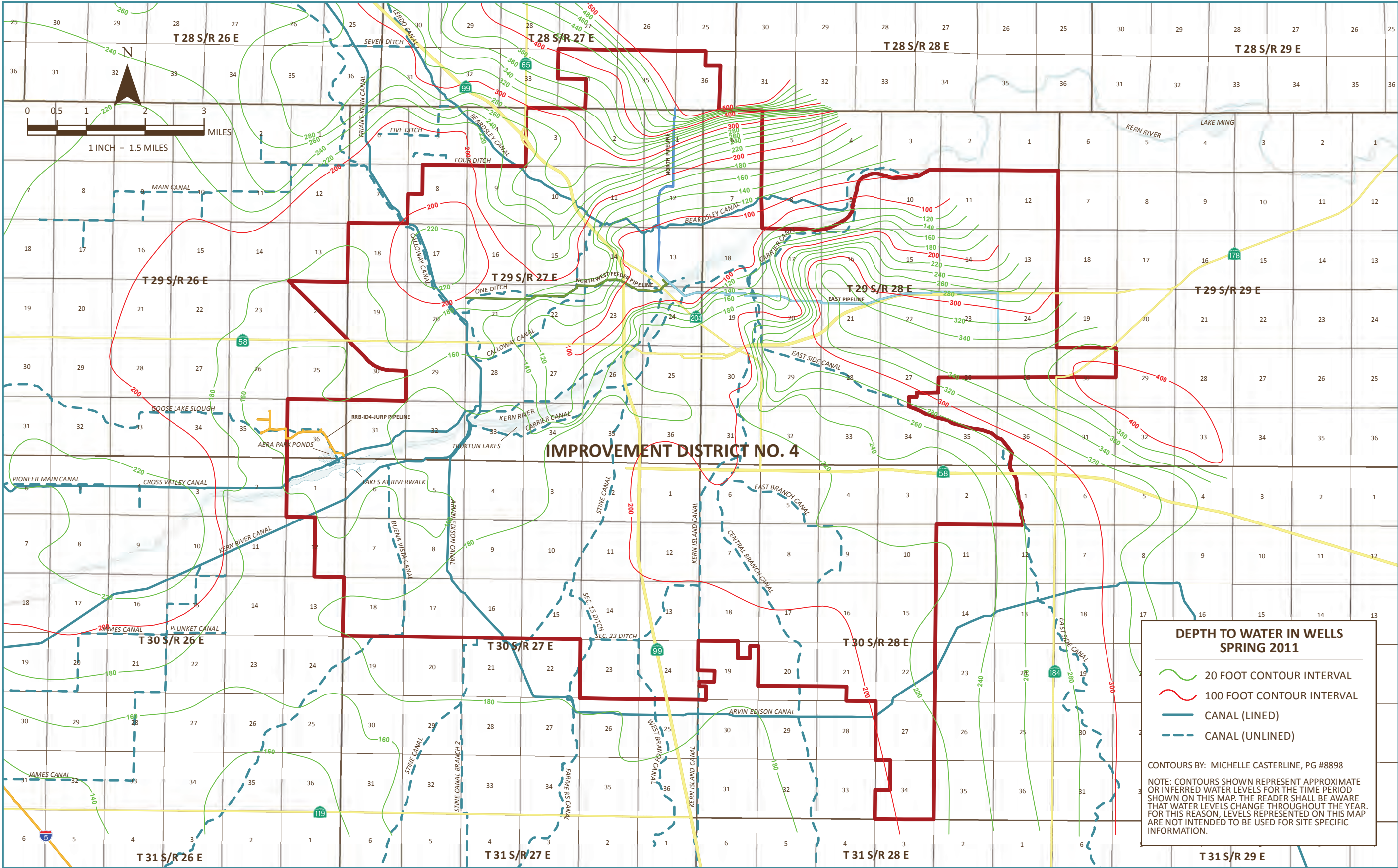
Plate 6 - Elevation of Water in Wells



BY: S. CHAMBLESS  
DATE: DECEMBER 19, 2011  
REVIEWED BY: M. VARGA  
FILENAME: Plate 6 - Elevation of Water in Wells (2011).mxd



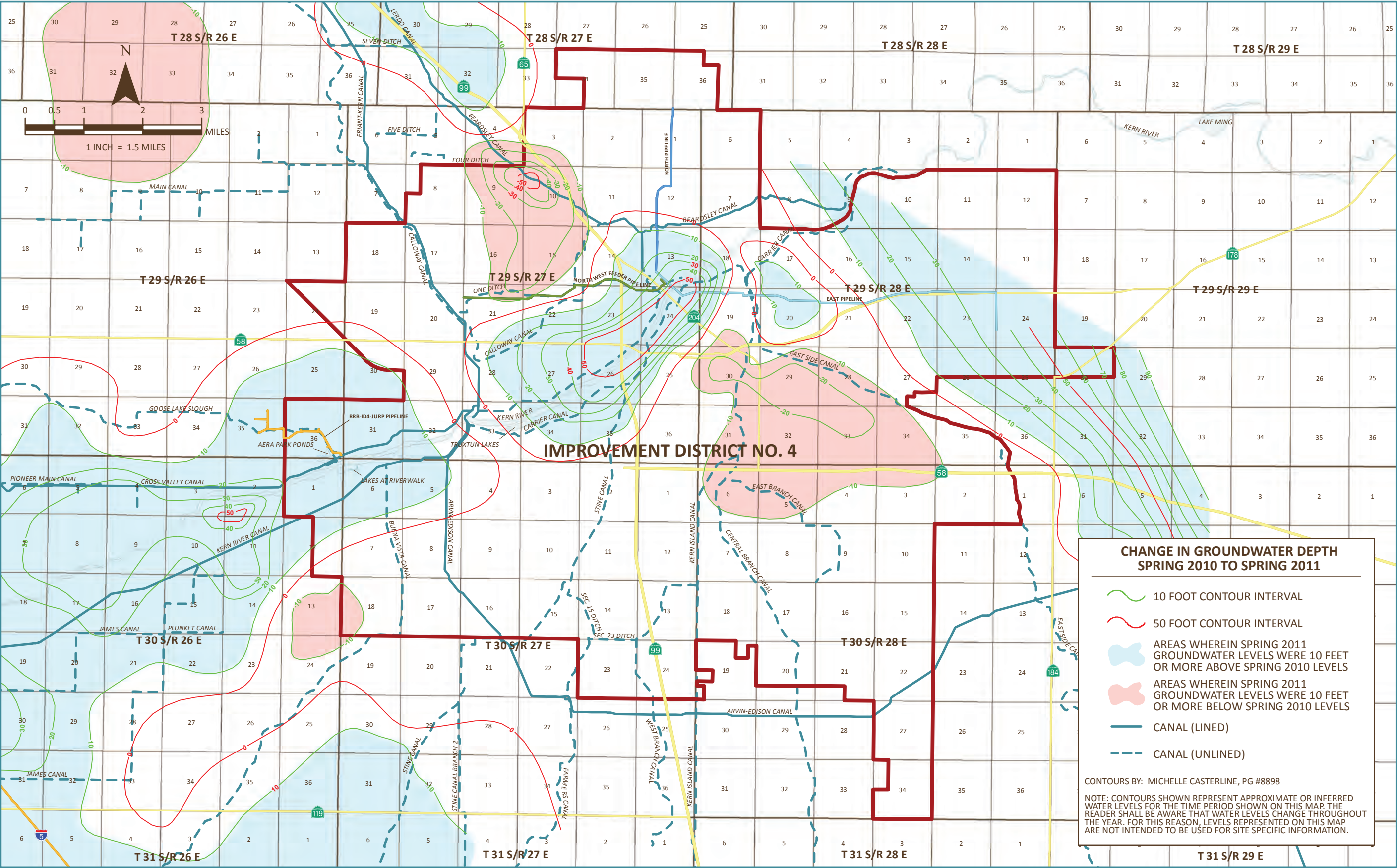
Plate 7 - Depth to Water in Wells



BY: S. CHAMBLESS  
DATE: DECEMBER 5, 2011  
REVIEWED BY: M. VARGA  
FILENAME: Plate 7 - Depth to Water in Wells (2011).mxd



Plate 8 - Change in Groundwater Depth



BY: S. CHAMBLESS  
DATE: DECEMBER 19, 2011  
REVIEWED BY: M. VARGA  
FILENAME: Plate 8 - Change in Groundwater Depth (2011).mxd



**Kern County Water Agency**  
3200 Rio Mirada Dr. / P.O. Box 58  
Bakersfield CA, 93308 / 93302-0058  
Phone: (661) 634-1400

